

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

Vol. XXXVI, No. 7, pp. 147-219; 56 figs.

September 30, 1968

MIRIDAE OF THE GALÁPAGOS ISLANDS
(HETEROPTERA)

By

José C. M. Carvalho¹

Museo Nacional, Rio de Janeiro

and

W. C. Gagné

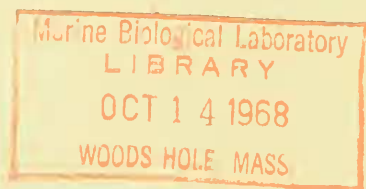
University of California, Berkeley

INTRODUCTION

This paper is based on collections of leaf bugs assembled in 1964 by the expedition of the University of California—Galápagos International Scientific Project. The types are deposited in the collections of the California Academy of Sciences, San Francisco. Some paratypes are retained in the collections of R. L. Usinger and W. C. Gagné, both of the University of California, Berkeley, and of J. C. M. Carvalho.

The original manuscript was prepared by J. C. M. Carvalho on the basis of material sent in 1965. After the manuscript and the specimens were returned from Rio de Janeiro, additional specimens were discovered in the unmounted material from the same expedition, in the California Academy of Sciences. Amongst this material were nine additional new species, the previously unknown females of three species described by Carvalho, and additional distribution records of almost every other species. All of these have been incorporated into the manuscript by Gagné and are so indicated or noted as "Additional specimens." The new material is the sole responsibility of Gagné, though it was added with the consent of Carvalho. Gagné also had the opportunity to examine the Barber types formerly the property of the New York Zoological Society and now con-

¹ Fellow of the Brazilian National Research Council.



tained in the American Museum of Natural History, New York, which were kindly made available by Drs. P. Wygodzinsky and R. L. Usinger.

We wish to thank Dr. R. L. Usinger, who kindly arranged for this study, and to express appreciation to Drs. P. H. Arnaud, Jr., and P. D. Ashlock for shipment of insects. The latter kindly sent color photographs of mirid types in the collection of the California Academy of Sciences. Illustrations of genitalia were made by Almir Fonseca Rosas, Assistant in the Department of Entomology, Museo Nacional, Rio de Janeiro. Drawings of whole insects were made by Mrs. Diana Slavens, under the supervision of Dr. P. D. Ashlock, at the B. P. Bishop Museum, Honolulu, Hawaii. Illustrations of the new species added by Gagné were prepared by him.

The material on which the present report is based consists principally of collections made on various islands of the Galápagos Archipelago by P. D. Ashlock, D. Q. Cavagnaro, G. Kuschel, R. O. Schuster, and R. L. Usinger in 1964. These main collections were supplemented by the small earlier collections of the Templeton Crocker Expeditions of 1932 and 1935 made by M. Willows, Jr., and T. Crocker, respectively, and which are also contained in the California Academy of Sciences.

In this report the names currently applied to the islands are used. These occur on the labels of most of the specimens examined, but not on all. The alternative names of the islands concerned here are given in parentheses in the following list: Darwin (Culpepper), Fernandina (Narborough), Floreana (Santa Maria, Charles), Isabela (Albemarle), Pinta (Abingdon), Pinzón (Duncan), Rábida (Jervis), San Cristóbal (Chatham), Santiago (San Salvador, James), Santa Cruz (Indefatigable) and Wolf (Wenman).

HISTORICAL

The first reference to the Miridae of the Galápagos Islands appeared in the work of Walker (1873), in which he studied the Hemiptera collected by Darwin in 1833. Three new species were recognized as follows: *Capsus spoliatus*, *C. quadrinotatus* and *C. nigrifulus*, from Charles and James islands.

Butler (1877), studying insects collected at Charles Island during the visit of H. M. S. *Peterel*, added two new species: *Miris lineata* and *Capsus darwini*. Mention is made and notes are given for the three species previously described by Walker.

The next mention of Galápagos mirids is that of Distant (1904) in which the genus *Dagbertus*, incorrectly placed in the Division Plagiognatharia, was erected for the following species: *D. darwini* Butler, *D. quadrinotatus* Walker, and *D. spoliatus* Walker.

Champion (1924) reported on insects of Galápagos, mentioning Walker's and Butler's species.

Reporting on the Hemiptera-Heteroptera from the Williams Galápagos Ex-

pedition, Barber (1925) described and figured *Creontiades fuscus* from Indefatigable and James Islands and described *Psallus insularis*, from James Island.

Five new species were added by Van Duzee (1933) who published on the Hemiptera collected by the Templeton Crocker Expedition of the California Academy of Sciences in 1932. They were: *Creontiades castaneum* (Chatham), *Creontiades willowsi* (Jervis), *Poeciloscytus vegatus* (Albemarle), *Fulvius geniculatus* (Chatham, James, Jervis, and Narborough) and *Diaphnidia crockeri* (James).

Barber (1934), studying the Hemiptera-Heteroptera collected by the Norwegian Zoological Expedition to the Galápagos Islands in 1925, listed 12 species, transferring "*vegatus*" Van Duzee to *Polymerus* Westwood.

Van Duzee (1937), reported on the Hemiptera collected by the Templeton Crocker Expedition to Polynesia (1934, 1935), and mentioned *Creontiades fuscus* Barber and *C. willowsi* Van Duzee from Indefatigable Island. *Cyrtopeltis* (*Engytatus*) *modesta* (Distant) was recorded for the first time from the Galápagos as *Engytatus geniculatus* Reuter. A new species of Phylinae, *Europiella mella* was described from Indefatigable Island.

The genitalia of *Dagbertus spoliatus* (Walker) were illustrated by Kelton (1955). Carvalho and Wagner (1957) redescribed and illustrated the genitalia of *Trigonotylus lineatus* (Butler), which was also referred to its correct genus.

Carvalho (1959) placed *nigritulus* Walker in the genus *Polymerus* Westwood, where it belongs. Reference here also is made for the first time to the occurrence of *Dolichomiris linearis* Reuter and *Horcias chiriquinus* Distant in the Galápagos Islands.

LIST OF GALÁPAGOS MIRIDAE

	Original generic assignment:	Present generic assignment:
CYLAPINAE		
Fulviini		
1. <i>geniculatus</i> Van Duzee, 1933	<i>Fulvius</i>	<i>Fulvius</i>
2. <i>brevicornis</i> Reuter, 1895	<i>Fulvius</i>	<i>Fulvius</i>
PHYLINAE		
Phylini		
3. <i>citrina</i> Carvalho, new species		<i>Campylomma</i>
4. <i>longirostris</i> Carvalho, new species		<i>Psallus</i>
5. <i>mella</i> (Van Duzee, 1937), new combination	<i>Europiella</i>	<i>Psallus</i>
6. <i>usingeri</i> Carvalho, new species		<i>Psallus</i>
7. <i>insularis</i> Barber, 1925	<i>Psallus</i>	<i>Psallus</i>
8. <i>rubescens</i> Carvalho, new species		<i>Rhinacloa</i>
Dicyphini		
9. <i>innotatus</i> Carvalho, new species		<i>Macrolophus</i>
10. <i>punctatus</i> Carvalho, new species		<i>Macrolophus</i>
11. <i>gummiferae</i> Gagné, new species		<i>Cyrtopeltis</i>
12. <i>helleri</i> Gagné, new species		<i>Cyrtopeltis</i>

- | | |
|---|------------------------|
| 13. <i>affinis</i> Gagné, new species | <i>Cyrtopeltis</i> |
| 14. <i>arida</i> Gagné, new species | <i>Cyrtopeltis</i> |
| 15. <i>floreanae</i> Gagné, new species | <i>Cyrtopeltis</i> |
| 16. <i>modesta</i> (Distant, 1893) | <i>Engytatus</i> |
| | <i>Cyrtopeltis</i> |

ORTHOTYLINEAE

Orthotylini

- | | | |
|--|------------------------|--------------------------------|
| 17. <i>crockeri</i> (Van Duzee, 1933), new combination | <i>Diaphnida</i> | <i>Galapagocoris</i> new genus |
|--|------------------------|--------------------------------|

MIRINAE

Stenodemini

- | | | |
|--|---------------------------|---------------------|
| 18. <i>linearis</i> Reuter, 1882 | <i>Dolichomiris</i> | <i>Dolichomiris</i> |
| 19. <i>lineatus</i> (Butler, 1877) | <i>Miris</i> | <i>Trigonotylus</i> |

Mirini

- | | |
|---|--------------------------------|
| 20. <i>longirostris</i> Carvalho, new species | <i>Galapagomiris</i> new genus |
| 21. <i>castaneum</i> Van Duzee, 1933 | <i>Creontiades</i> |
| 22. <i>citrinus</i> Carvalho, new species | <i>Creontiades</i> |
| 23. <i>fernandinus</i> Carvalho, new species | <i>Creontiades</i> |
| 24. <i>fuscus</i> Barber, 1925 | <i>Creontiades</i> |
| 25. <i>punctatus</i> Carvalho, new species | <i>Creontiades</i> |
| 26. <i>vittatus</i> Carvalho, new species | <i>Creontiades</i> |
| 27. <i>willowsi</i> Van Duzee, 1933 | <i>Creontiades</i> |
| 28. <i>chiriquinus</i> Distant, 1884 | <i>Horcias</i> |
| 29. <i>nigritulus</i> (Walker, 1873) | <i>Capsus</i> |
| 30. <i>pallidulus</i> (Blanchard, 1852) | <i>Phytocoris</i> |
| 31. <i>darwini</i> (Butler, 1877) | <i>Capsus</i> |
| 32. <i>formosus</i> Carvalho, new species | <i>Dagbertus</i> |
| 33. <i>marmoratus</i> Carvalho, new species | <i>Dagbertus</i> |
| 34. <i>quadrinotatus</i> (Walker, 1873) | <i>Capsus</i> |
| 35. <i>spoliatus</i> (Walker, 1873) | <i>Capsus</i> |
| 36. <i>pallidus</i> Gagné, new species | <i>Dagbertus</i> |
| 37. <i>nigrifrons</i> Gagné, new species | <i>Dagbertus</i> |
| 38. <i>lineatus</i> Gagné, new species | <i>Dagbertus</i> |
| 39. <i>figuratus</i> Gagné, new species | <i>Dagbertus</i> |

FAMILY MIRIDAE

Key to Subfamilies

- | | |
|---|---------------|
| 1. Arolia present, large and free, arising between claws (fig. 1 c, d) | 2 |
| – Arolia absent, substituted by a pair of straight hairs (fig. 1 a, b) | 3 |
| 2. Arolia distinctly divergent towards their apices, usually dilated; pronotal collar present and well separated from pronotum by a furrow (fig. 2 a) | MIRINAE |
| – Arolia parallel or convergent towards their apices, usually slender; pronotal collar absent (fig. 2 b) | ORTHOTYLINEAE |
| 3. Pseudarolia present, free or connected with claw, sometimes very minute and difficult to see, claws normal (fig. 1 b) | PHYLINAE |
| – Pseudarolia absent; claws very long and slender (fig. 1 a) | CYLAPINAE |

The subfamilies Bryocorinae, Palaucorinae, and Deraeocorinae have not been recognized from the Galápagos Islands so far.



a



b

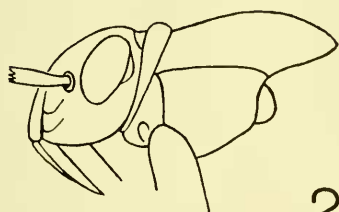
1



c

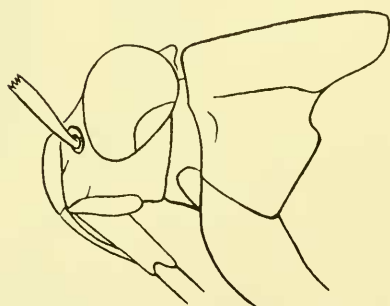


d



a

2



b

FIGURE 1. Tarsal claws: a, Cylapinae; b, Phylinae; c, Orthotylinae; d, Mirinae.

FIGURE 2. Lateral view of pronotum: a, Mirinae; b, Orthotylinae.

SUBFAMILY CYLAPINAE

TRIBE FULVINI

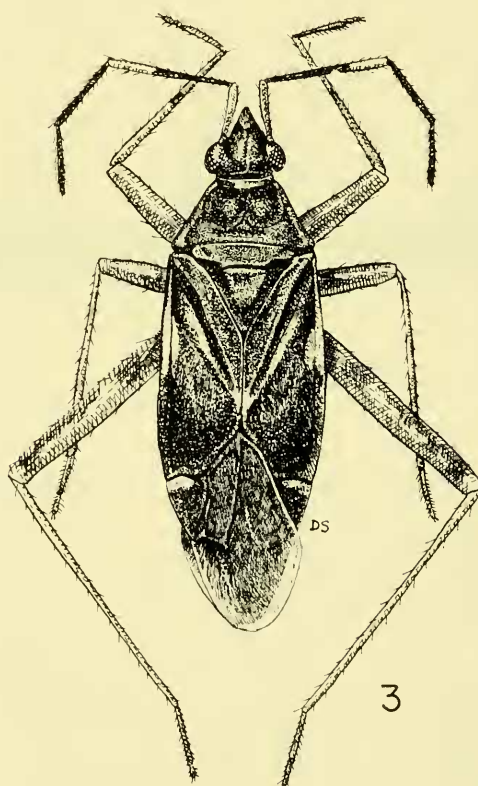
Genus FULVIUS Stål

Key to Galápagos Species

1. Base of hemelytra brown, corium with a transverse whitish band opposite to middle of clavus which is extended to embolium; coxa I whitish with narrow brown base and apex *F. geniculatus*
- The whole base of hemelytra until line level with apex of scutellum whitish; coxa I brown with extreme apex pale *F. brevicornis*

1. *Fulvius geniculatus* Van Duzee.

(Figures 3, 4.)

Fulvius geniculatus VAN DUZEE, 1933, Proc. Calif. Acad. Sci., ser. 4, vol. 21, no. 4, p. 29.FIGURE 3. *Fulvius geniculatus* Van Duzee. Male.

Characterized by its color and male genitalia.

MALE. Length 3.2 mm., width 1.0 mm. Head: Length 0.4 mm., width 0.5

mm., vertex 0.20 mm. *Antennae*: Segment I, length 0.5 mm.; II, 0.8 mm.; III, 0.5 mm.; IV, 0.5 mm. *Pronotum*: Length 0.3 mm., width at base 0.8 mm.

General color fuscous brown; darker on pronotum and head; sides of meso-scutum with obscure reddish mark, corium with a transverse whitish band opposite middle of clavus which is extended to embolium; extreme tip of clavus and a lunule on base of cuneus, extreme base of hemelytra, pale to yellowish; extreme apex of antennal segment I pale, apical third of segment III whitish; coxae white, narrow base and apex of I and broader base of II and III coxae brown; trochanter whitish, extreme apex of femora, tibiae and tarsi pale.

Rostrum reaching 8th abdominal segment (male) and 6th-7th segment (female).

Genitalia: Aedeagus (fig. 4a) with a characteristic spiculum and a field of spines on the vesica. Left clasper (fig. 4b) as in figure. Right clasper (fig. 4c) very small and inconspicuous.

FEMALE. Similar to male in color and slightly more robust. Length 3.5 mm., width 1.2 mm.

DISTRIBUTION. San Cristóbal, Santiago, Rábida, Fernandina, and Santa Cruz islands.

SPECIMENS STUDIED. SANTA CRUZ: 1 ♂, 5 ♀, Bella Vista, 220 m., I-28-64 (Kuschel); 1 ♂, Horneman Farm, II-16-64 (Cavagnaro and Schuster); 1 ♂, 1 ♀, Table Mountain, 440 m., IV-16-64 (Cavagnaro); 3 ♂♂, 10 ♀♀, Grassland, 1800 feet elevation, N. Academy Bay, II-18-64, under *Jaegeria hirta* Lessing (Ashlock); SANTIAGO: 2 ♂♂, NW slope, 600 m., V-30-64 (Cavagnaro).

Two male paratypes from Santiago Island, Galápagos Archipelago, VI-4-32, Templeton Crocker Expedition, 1932, with labels in Van Duzee's handwriting were studied.

The holotype male was collected on San Cristóbal Island.

ADDITIONAL SPECIMENS. SANTA CRUZ: 4 ♂♂, 3 ♀♀, Horneman Farm, 220 m., III-18-1964 (Cavagnaro); 3 ♂♂, 3 ♀♀, same locality, III-25-1964; 6 ♂♂, same locality, III-10-1964; 1 ♂, same locality, IV-5-1964; 1 ♂, same locality, V-16-1964.

This species differs from *Fulvius brevicornis* Reuter in the color of the hemelytra and of the first coxae and in the structure of the male genitalia.

2. *Fulvius brevicornis* Reuter.

(Figure 5.)

Fulvius brevicornis REUTER, 1895, Rev. d'Ent., vol. 14, p. 138.

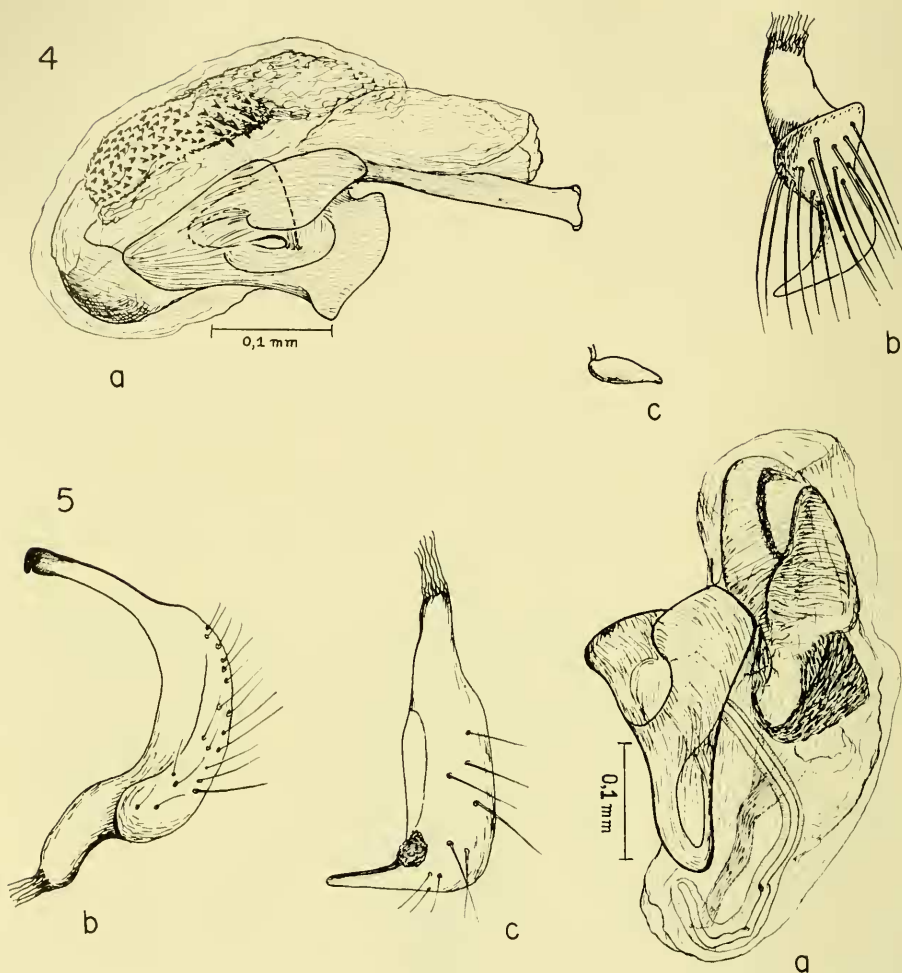
Teratodella anthocoroides REUTER, 1875, not Stål, K. Sven. Vet.-Akad., Bihang., Handl., vol. 3, no. 1, p. 8.

Fulvius samoanus KNIGHT, 1935, Insects of Samoa, vol. 2, no. 5, p. 203.

Fulvius brevicornis, CARVALHO, Insects of Micronesia, vol. 7, no. 1, p. 6.

Characterized by its color and male genitalia.

MALE. Length 3.0 mm., width 0.9 mm. *Head*: Length 0.5 mm., width 0.5



FIGURES 4-5. *Fulvius* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 4. *F. geniculatus* Van Duzee; figure 5. *F. brevicornis* Reuter.

mm., vertex 0.22 mm. *Antennae*: Segment I, length 0.3 mm.; II, 0.5 mm.; III, 0.4 mm.; IV, 0.4 mm. *Pronotum*: Length 0.3 mm., width at base 0.9 mm.

General color dark castaneous to brown; apical third of antennal segment II, basal third of hemelytra and small area of extreme base of embolium reaching slightly over exocorium, whitish; apices of coxae, trochanters, extreme apices of femora and tibiae towards apices, pale yellow. Some specimens show a reddish tinge on apex of clypeus, bucculae and apices of femora.

Rostrum reaching genital segment (male) and 7th segment (female).

Genitalia: Aedeagus (fig. 5a) without a definite spiculum but with a field

of spines. Left clasper (fig. 5b) typical for the species with a hook-like apex. Right clasper (fig. 5c) as seen in figure.

FEMALE. Similar to male in color, slightly more robust. The rostrum is also a little shorter. Length 3.2 mm., width 1.1 mm.

DISTRIBUTION. Africa, Asia, Bonin Island, Brazil, Burma, Christmas Island, Ceylon, Cuba, East Indies, Formosa, Mariana Islands, Martinique, North America, St. Thome, Samoa, Venezuela, and Santa Cruz Island.

SPECIMENS STUDIED. SANTA CRUZ: 1 ♀, Darwin Research Station Academy Bay, I-25-64 (Kuschel); 4 ♀♀, Academy Bay, Darwin Research Station, (Schuster), III-18-64; Bella Vista Trail (Cavagnaro), V-10-64, damp bark of *Erythrina*.

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♀, Academy Bay, Darwin Research Station, II-12-1964 (Cavagnaro & Schuster); 1 ♂, same locality, II-4-1964, at light (Schuster); 2 ♂♂, 3 ♀♀, Table Mountain, 440 m., IV-16-1964 (Cavagnaro); 1 ♀, Bella Vista Trail, V-10-1964, damp bark of *Erythrina* (Cavagnaro).

This species is easily separated from *Fulvius geniculatus* Van Duzee by the whitish basal third of hemelytra and also by the brown coxae.

SUBFAMILY PHYLINAE

Key to Galápagos Tribes

- | | |
|---------------------------------|----------|
| 1. Pronotal collar absent | PHYLINI |
| - Pronotal color present | DIAPHINI |

TRIBE PHYLINI

Key to Genera

- | | |
|--|--------------------|
| 1. Body beset with scale-like or silvery flattened hairs intermixed with common pubescence; hemelytra opaque | 2 |
| - Body with a single type of pubescence, without scale-like or silvery flattened hairs; hemelytra translucent | <i>Camptolomma</i> |
| 2. Length of second antennal segment of male greater than width of head across eyes; on the female this segment is cylindrical and about as long as width of head, the latter produced in front of antennal bases (fig. 6a) | <i>Psallus</i> |
| - Length of second segment of antenna of male equal or less than width of head across eyes; on the female this segment is incrassate towards apex and shorter than width of head across eyes; head not produced in front of antennal bases (fig. 6b) | <i>Rhinacloa</i> |

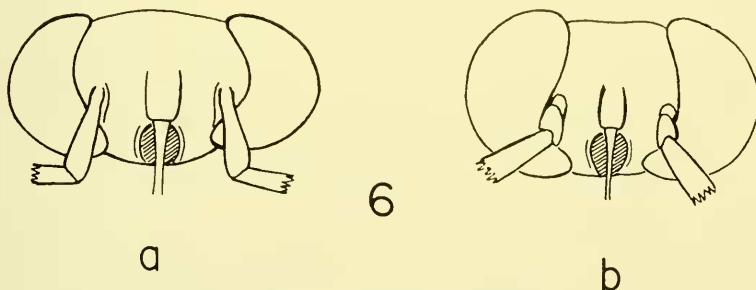
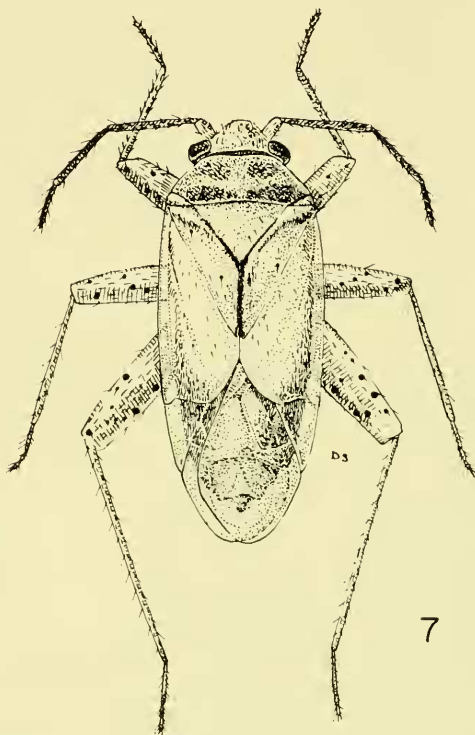


FIGURE 6. Anterior view of Head: a, *Psallus*; b, *Rhinacloa*.

Genus *Campylomma* Reuter3. *Campylomma citrina* Carvalho, new species.

(Figures 7, 8.)

FIGURE 7. *Campylomma citrina* Carvalho, new species. Female.

Characterized by the color of the antennal segments, by the color of the body and by the aedeagus of male.

MALE. Length 2.7 mm., width 1.1 mm. *Head:* Length 0.1 mm., width 0.6 mm., vertex 0.37 mm. *Antennae:* Segment I, length 0.2 mm.; II, 0.8 mm.; III, 0.5 mm.; IV, 0.3 mm. *Pronotum:* Length 0.3 mm., width at base 0.9 mm.

General color pale flavescent to pale citrine, translucent; antennae with extreme base of segments I and II and a spot on subapical internal portion of segment I, fuscous to black, segments II and IV tending to fuscous; head, pronotum and mesoscutum citrine, scutellum slightly darker; hemelytra hyaline or translucent, membrane infusate at middle; underside concolorous with pronotum, rostrum tipped with fuscous, femora I and II with 4 to 5 spots at bases of setae equidistant from each other along ventral surface and others much smaller in size placed on outer surface, the hind femora with spots distributed as shown in figure 8c, tarsi tipped with fuscous.

Rostrum reaching middle coxae.

Genitalia: Aedeagus (fig. 8a) with vesica showing typical secondary gonopore. Left clasper (fig. 8b) as shown in figure. Right clasper (fig. 8c) small, as illustrated.

FEMALE. Similar to male in color. Length 2.8 mm., width 1.2 mm.

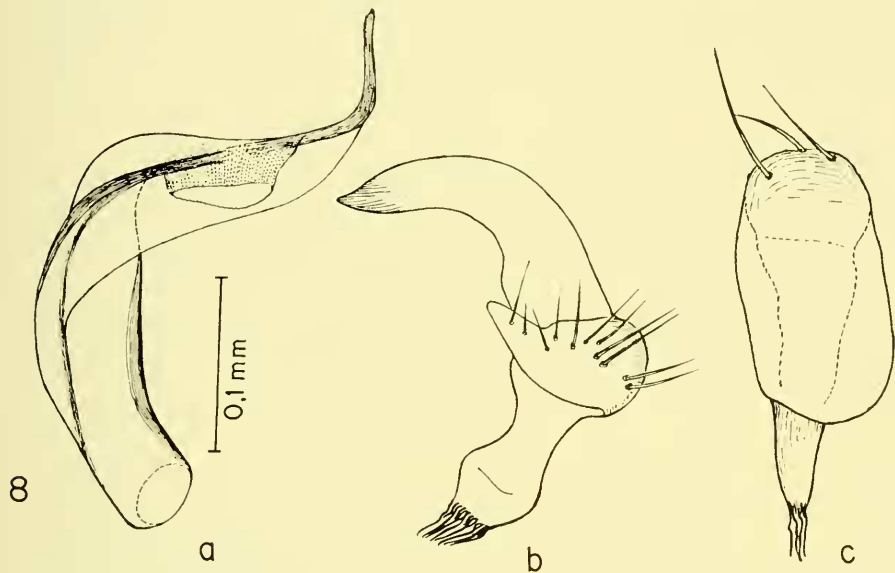


FIGURE 8. *Campylomma citrina* Carvalho, new species: a, Aedeagus; b, Left clasper; c, Right clasper.

HOLOTYPE. Male, Galápagos, Archipelago, Bella Vista, Santa Cruz Island, II-4-64 (Usinger).

ALLOTYPE. Female, same data as holotype.

PARATYPES. Three males, same data as type.

ADDITIONAL SPECIMENS. SANTA CRUZ: 6 ♂♂, 18 ♀♀, Bella Vista, II-4-1964 (Usinger). FLOREANA: 1 ♂, 1 ♀, Wittmer Farm, II-15-1964 (Usinger); 1 ♀, same data, II-18-1964.

This species approaches *Campylomma verbasci* (Meyer) and *Campylomma unicolor* Poppius in the color of antennae but differs from them by the general color of the body and by the structure of the aedeagus. The spots of posterior femora are also characteristic of this species.

Genus PSALLUS Fieber

Key to Galápagos Species

1. Rostrum reaching beyond apex of hind coxae, attaining genital segment (male) or 7th to 8th segment (female) *P. longirostris*

- Rostrum not reaching beyond apices of middle or hind coxae 2
- 2. General color black to brownish or reddish brown; posterior femora and all coxae black to brownish red *P. mella*
- General color straw to pale yellow or yellowish; all femora and coxae pale 3
- 3. Head, pronotum, scutellum and clavus internally with a marked longitudinal dark fascia; posterior femora with two large plus one or two small black spots inferiorly *P. usingeri*
- Body above pale or straw color, if darkened on pronotum or scutellum then the clavus pale; posterior femora with four large plus two or three small black spots inferiorly *P. insularis*

4. ***Psallus longirostris* Carvalho, new species.**

(Figures 9b, 11.)

Characterized by the rostral length and color of posterior femora.

MALE. Length 2.2 mm., width 1.0 mm. *Head:* Length 0.1 mm., width 0.6 mm., vertex 0.27 mm. *Antennae:* Segment I, length 0.1 mm.; II, 0.7 mm.; III, 0.5 mm.; IV, 0.2 mm. *Pronotum:* Length 0.3 mm., width at base 0.8 mm.

General color straw or pale yellowish; eyes dark brown, membrane infumate, upper surface covered by black bristles and silvery scale-like hairs, posterior femora with black dots as in figure 9b, tibial spines and spots at their bases, apex of rostrum, apices of tarsi and claws, black.

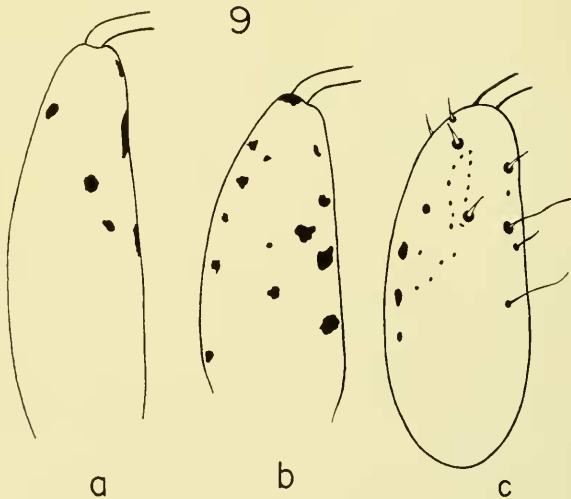


FIGURE 9. Lateral view of posterior femur: a, *Psallus insularis* Barber; b, *Psallus longirostris* Carvalho, new species; c, *Campylomma citrina* Carvalho, new species.

Rostrum reaching genital segment (male) or 7th or 8th segment (female); second antennal segment cylindrical.

Genitalia: Aedeagus (fig. 11a) as illustrated. Left clasper (fig. 11b) and right clasper (fig. 11c) as shown in figures.

FEMALE. Similar to male in color, the second antennal segment slightly incrassate towards apex. Length 2.4 mm., vertex 0.32 mm., II antennal segment 0.6 mm.

HOLOTYPE. Male, Santa Cruz Island, Academy Bay, Darwin Research Station, I-21-64 (Cavagnaro & Schuster), sweeping coastal plants.

ALLOTYPE. Female, same data as type.

PARATYPES. SANTA CRUZ: 7 ♂♂, 20 ♀♀, Academy Bay, I-26-1964 (Ashlock); 11 ♂♂, 7 ♀♀, Academy Bay, Darwin Research Station (Cavagnaro & Schuster), sweeping coastal plants. PINZÓN: 5 ♂♂, 11 ♀♀, summit and upper Caldera area, II-7-64 (Cavagnaro).

ADDITIONAL SPECIMENS. SAN CRISTÓBAL: 1 ♂, 3 ♀♀, Wreck Bay, II-24-1964, lowland dry forest (Usinger). FLOREANA: 1 ♀, Black Beach, II-14-1964, Ex *Scalesia gummiifera* (Usinger). ISABELA: 2 ♀♀, Tagus Cove, I-30-1964, Ex *Scalesia gummiifera* (Usinger); 1 ♀, same data but no host indicated. SANTA CRUZ: 1 ♂, Bella Vista, II-26-1964 (Usinger). PINZÓN: 26 ♂♂, 14 ♀♀, Upper Caldera Valley Area, II-7-1964 (Cavagnaro).

This species differs from *P. insularis*, *P. mella*, and *P. usingeri* by the length of the rostrum and by the color of the posterior femora.

5. *Psallus mella* (Van Duzee), new combination.

(Figures 10, 12.)

Europiella mella VAN DUZEE, 1937, Proc. Calif. Acad. Sci., ser. 4, vol. 22, p. 117.

Characterized by its color and dimensions.

MALE. Length 2.3 mm., width 1.1 mm. *Head*: Length 0.1 mm., width, 0.6 mm., vertex 0.30 mm. *Antennae*: Segment I, length 0.1 mm.; II, 0.6 mm.; III, 0.3 mm.; IV, 0.2 mm. *Pronotum*: Length 0.3 mm., width at base 0.9 mm.

General color black to blackish brown, a few specimens (females) brown to reddish brown; antennae, head, pronotum and scutellum, black; hemelytra black on clavus and corium internally, exocorium dark brown, embolium and cuneus with traces of red; membrane fuscous with a light mark contiguous to cuneus. On females, the clavus and extreme base of corium, brownish yellow. Teneral females (as Van Duzee's paratype female on hand) are brownish yellow with clavus and base of corium paler, reddish traces on cuneus present. Underside of body, except pale area on median base of abdomen, black. In some specimens, anterior and median femora pale to yellowish. Coxae (except extreme apices) and femora (except extreme apices and bases), black; tibiae, rostrum and tarsi (except extreme apices), pale. The lighter females have the underside of body, especially the external area, with reddish tinge.

Rostrum reaching to middle coxae. Antennal segment II cylindrical (male).

Genitalia: Aedeagus (fig. 12a) with vesica as illustrated. Left clasper (fig. 12b) and right clasper (fig. 12c) as shown in figures.

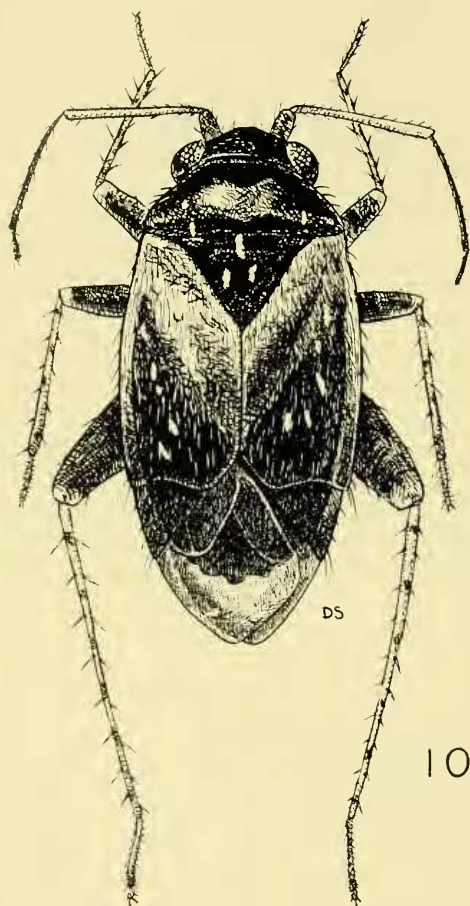


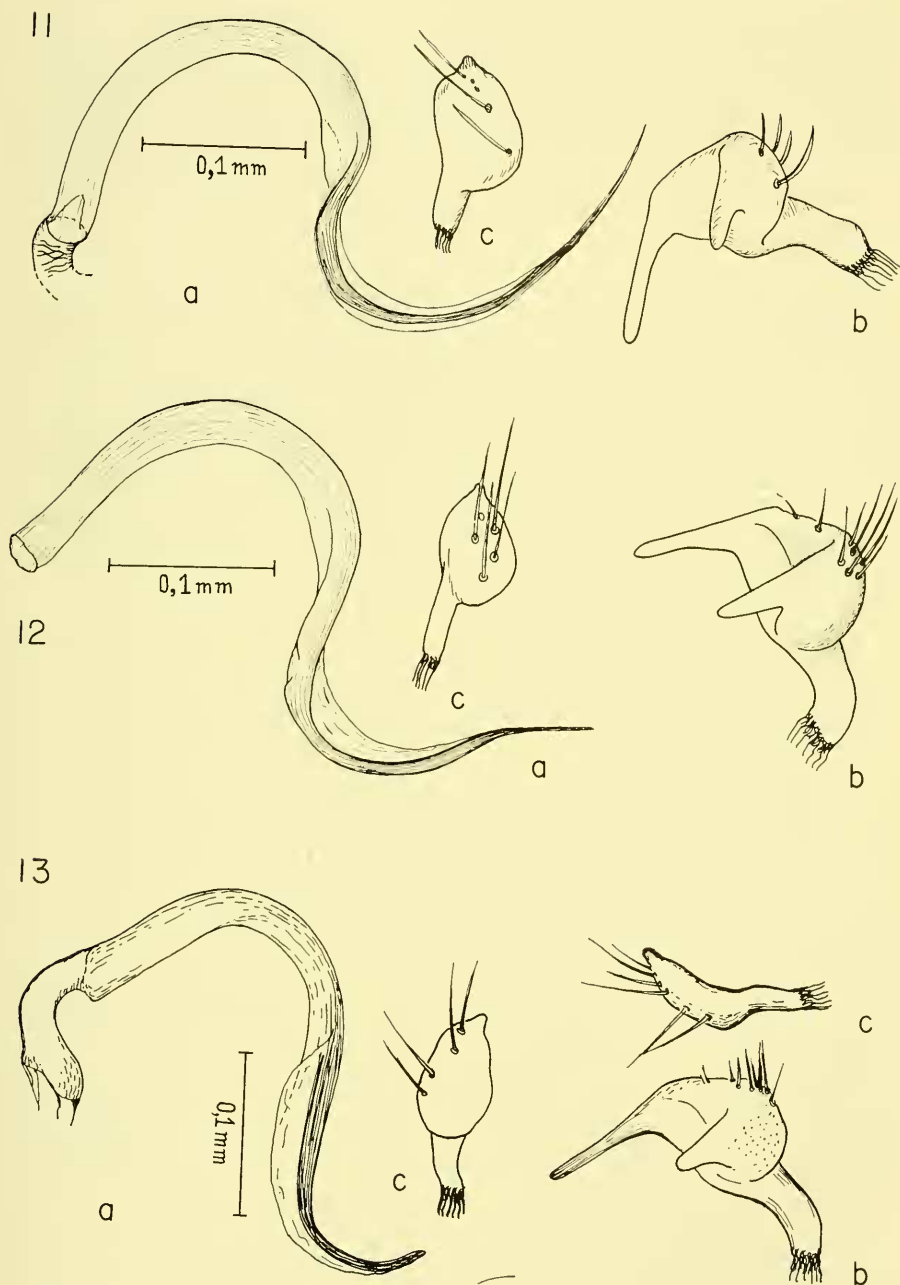
FIGURE 10. *Psallus mella* (Van Duzee), new combination. Female.

FEMALE. Similar to male, except in color of clavus and base of corium. Antennal segment II slightly incrassate towards apex.

DISTRIBUTION. Galápagos Archipelago: (Santa Cruz, Fernandina).

SPECIMENS STUDIED. SANTA CRUZ: 1 ♀, Allotype, Conway Bay, III-16-1935, Templeton Crocker Expedition (in California Academy of Sciences). 3 ♂♂, 10 ♀♀, Table Mountain, 440 m., IV-16-64 (Cavagnaro); 4 ♂♂, 2 ♀♀, Grassland, 750 m., IV-16-64 (Cavagnaro); 3 ♂♂, 2 ♀♀, Bella Vista, abandoned garden, 5-6 miles N. Academy Bay, II-13-64 & I-24-64 (Ashlock). FERNANDINA: 8 ♂♂, 2 ♀♀, W. side, 1100 feet, II-5-64 (Cavagnaro).

ADDITIONAL SPECIMENS. FERNANDINA: 32 ♂♂, 5 ♀♀, W. side, 1100 feet, II-5-1964 (Cavagnaro). SANTA CRUZ: 37 ♂♂, 41 ♀♀, Table Mountain, 440 m., IV-16-1964 (Cavagnaro).



FIGURES 11-13. *Psallus* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 11. *P. longirostris* Carvalho, new species; figure 12. *P. mella* (Van Duzee), new combination; figure 13. *P. usingeri* Carvalho, new species.

This species is related to *P. longirostris*, *P. insularis*, and *P. usingeri*. It differs from them by its color and dimensions.

Specimens from Fernandina Island are much more uniform in color, the females are concolorous with males, showing a marked tendency to speciation, but the morphological characters are not distinct enough to safely establish separate species.

6. *Psallus usingeri* Carvalho, new species.

(Figure 13.)

Characterized by its color and length of antennae.

MALE. Length 2.7 mm., width 0.9 mm. *Head*: Length 0.1 mm., width 0.6 mm., vertex 0.35 mm. *Antennae*: Segment I, length 0.2 mm.; II, 0.9 mm.; III, 0.6 mm.; IV, 0.2 mm. *Pronotum*: Length 0.3 mm., width at base 0.8 mm.

General color pale yellow to citrine with a dark fascia over head, middle of pronotum, scutellum and clavus; membrane pale fuscous; antennae slightly infusate, segment II darkened at extreme apex; underside of body yellowish to citrine; posterior femora with two large and two or three small black spots on inferior margin; tibial spines and spots at their bases, apices of tarsi and apex of rostrum, black.

Rostrum reaching to middle coxae.

Genitalia: Aedeagus (fig. 13a) with vesica as illustrated. Left clasper (fig. 13b) and right clasper (fig. 13c) as shown in figures.

HOLOTYPE. Male, Galápagos Archipelago, Bella Vista, Santa Cruz, II-4-1964 (Usinger).

PARATYPES. Two males, same data as holotype.

The female has been discovered in additional material and is described below by Gagné:

FEMALE. Differing from male as follows: Length 2.47 mm. (2.35 to 2.52 mm.); width 0.90 mm. (0.90 to 1.05 mm.), shorter but more robust. *Head*: Length 0.34 mm. (0.30 to 0.38 mm.); width 0.61 mm. (0.60 to 0.66 mm.); vertex width 0.34 mm. (0.32 to 0.36 mm.); lacking the dorsal dark fascia. *Antenna*: I, 0.24 mm. (0.20 to 0.24 mm.); II, 0.56 mm. (0.53 to 0.56 mm.), not darkened at extreme apex; III, 0.42 mm. (0.37 to 0.47 mm.); IV, broken in allotype (0.23 to 0.25 mm.). *Pronotum*: Length 0.38 mm. (0.34 to 0.41 mm.); width 0.79 mm. (0.75 to 0.84 mm.); dorsal fascia present only as a spot on middle of disc. Fasciae on scutellum and hemelytra narrower so that the basolateral region of scutellum and most of clavus are pale yellow; membrane infusate only at middle. *Rostrum*: Length 0.81 mm. (0.77 to 0.82 mm.).

NEALLOTYPE. Female, Galápagos Archipelago, Isla Santa Cruz, Horneman Farm, 220 m., IV-5-1964 (Cavagnaro).

ADDITIONAL SPECIMENS. SANTA CRUZ: 4 ♂♂, Bella Vista, IV-4-1964 (Usinger); 1 ♂, 2 ♀♀, Horneman Farm, 220 m., IV-5-1964 (Cavagnaro); 1 ♀, Table Mountain, 440 m., IV-16-1964 (Cavagnaro); 1 ♂, same data, IV-

18-1964; 1 ♀, Grassland, 750 m., V-5-1964 (Cavagnaro). FLOREANA: 1 ♂, 1 ♀, II-18-1964 (Usinger); 1 ♀, Wittmer Farm, II-15-1964 (Usinger).

This species differs from *P. insularis* by the color of body, and by the number and location of spots on the posterior femora.

7. *Psallus insularis* Barber.

(Figures 9a, 14.)

Psallus insularis BARBER, 1925, Zoologica, vol. 5, p. 250.

Characterized by its color and number of black spots on posterior femora.

MALE. Length 2.5 mm., width 1.1 mm. *Head*: Length 0.1 mm., width 0.6 mm., vertex 0.30 mm. *Antennae*: Segment I, length 0.1 mm.; II, 1.0 mm.; III, 0.5 mm.; IV, 0.3 mm. *Pronotum*: Length 0.4 mm., width at base 0.9 mm.

General color sordid stramineous to pale yellow; eyes dark brown; posterior femora with four to five larger black spots on inferior margin and a few smaller ones on external surface; tibial spines and spots at their bases, black (fig. 8a). Body covered by black bristles and silvery scale-like hairs.

Rostrum reaching to hind coxae.

Genitalia: Aedeagus (fig. 14a) with vesica as illustrated. Left clasper (fig. 14b) and right clasper (fig. 14c) as shown in figures.

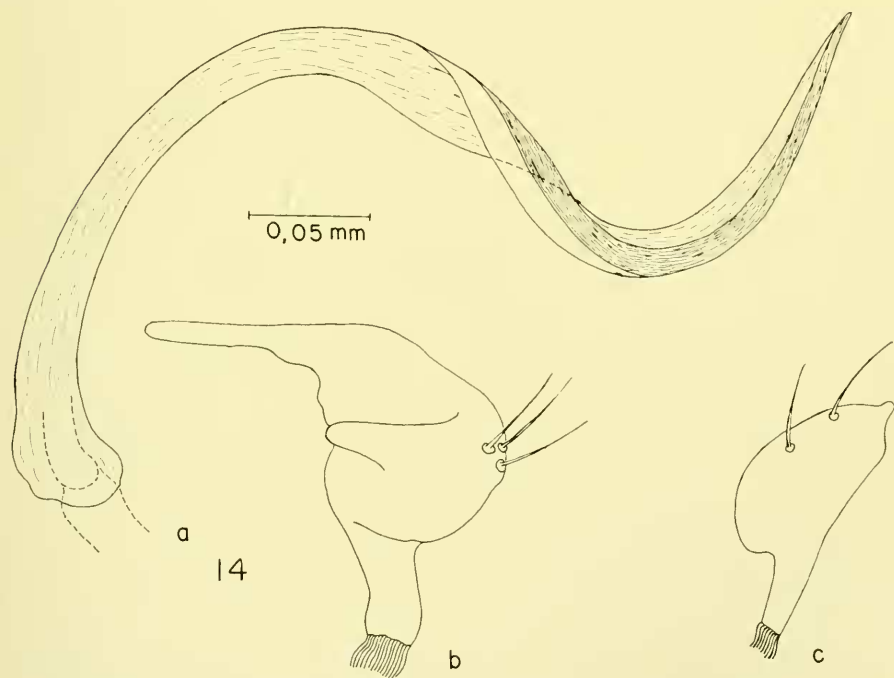


FIGURE 14. *Psallus insularis* Barber: a, Aedeagus; b, Left clasper; c, Right clasper.

FEMALE. Similar to male, antennal segment II slightly shorter and very slightly incrassate towards apex.

DISTRIBUTION. Galápagos Archipelago: (Santa Cruz, Darwin, Isabela, San Cristóbal, Floreana, Fernandina, Pinta).

SPECIMENS STUDIED. SANTA CRUZ: 2 ♀♀, Tortuga Bay, II-10-1964 (Usinger); 11 ♂♂, 7 ♀♀, Academy Bay, Darwin Research Station, I-21-1964 (Cavagnaro & Schuster), sweeping coastal plants; same locality, 4 ♂♂, I-25-1964; same locality, 2 ♂♂, II-20-1964; 1 ♂, same locality, II-22-1964 (Ashlock) at light; 2 ♂♂, same locality, I-25-1964 (Kuschel); same locality, E. slope, 160 m., IV-16-1964 (Cavagnaro), Table Mountain, 440 m., 4 ♂♂, 1 ♀. DARWIN: 3 ♂♂, 5 ♀♀, I-29-1964 (Cavagnaro); 6 ♂♂, 3 ♀♀, I-29-1964, *Alternanthera* species (Ashlock); 1 ♂, 2 ♀♀, II-7-1964, *Scaevola* species (Ashlock). ISABELA: 2 ♀♀, Tagus Cove, I-30-1964 (Usinger). SAN CRISTÓBAL: 1 ♀, Wreck Bay, II-24-1964, lowland dry forest (Usinger). FLOREANA: 2 ♂♂, 4 ♀♀, Wittmer Farm, II-15-1964 (Usinger), 1 ♂, 2 ♀♀, II-18-1964 (Usinger).

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♂, 1 ♀, Academy Bay, Darwin Research Station, I-25-1964, at light (Cavagnaro & Schuster); 1 ♂, same data, I-24-1964; 3 ♂♂, 2 ♀♀, same data, I-27-1964; 1 ♀, same data (Kuschel); 7 ♂♂, 3 ♀♀, same locality, II-4-1964, at light (Schuster); 3 ♂♂, 3 ♀♀, same data, II-6-1964; 1 ♀, same data, II-7-1964; 1 ♂, 1 ♀, Tortuga Bay, II-10-1964 (Usinger); 1 ♂, Academy Bay, Darwin Research Station, II-10-1964, at light (Cavagnaro & Schuster); 1 ♂, same locality, II-18-1964 (Schuster); 5 ♂♂, 1 ♀, same locality, II-20-1964, at light (Cavagnaro); 1 ♂, 12 ♀♀, same locality, II-24-1964 (Cavagnaro & Schuster); 1 ♂, 1 ♀, Horneman Farm, 220 m., III-10-1964 (Cavagnaro); 5 ♂♂, 1 ♀, same data, III-18-1964; 1 ♂, 2 ♀♀, same data, IV-5-1964; 4 ♂♂, 6 ♀♀, E. slope, 160 m., IV-16-1964 (Cavagnaro); 14 ♂♂, 7 ♀♀, Table Mountain, 440 m., same dates and collector. DARWIN: 20 ♂♂, 15 ♀♀, I-29-1964 (Cavagnaro). FERNANDINA: 1 ♀, W. side, 1100 feet, II-5-1964 (Cavagnaro); 2 ♂♂, 1 ♀, Punta Espinosa, I-29-1964 (Usinger). FLOREANA: 1 ♂, Wittmer Farm, II-15-1964 (Usinger); 1 ♀, II-18-1964 (Usinger). SAN CRISTÓBAL: 1 ♀, Wreck Bay, II-24-1964 (Usinger). PINTA: 2 ♂♂, S. coast, V-25-1964 (Cavagnaro).

This species is very near *P. usingeri* but differs by the color of the body and the number of spots on the posterior femora.

Genus *Rhinacloa* Reuter

8. *Rhinacloa rubescens* Carvalho, new species.

(Figures 15, 16.)

Characterized by its color and dimensions.

MALE. Length 2.2 mm., width 1.1 mm. *Head*: Length 0.1 mm., width 0.6 mm., vertex 0.25 mm. *Antennae*: Segment I, 0.1 mm.; II, 0.7 mm., III, 0.3 mm.; IV, broken. *Pronotum*: Length 0.3 mm.; width at base 0.9 mm.

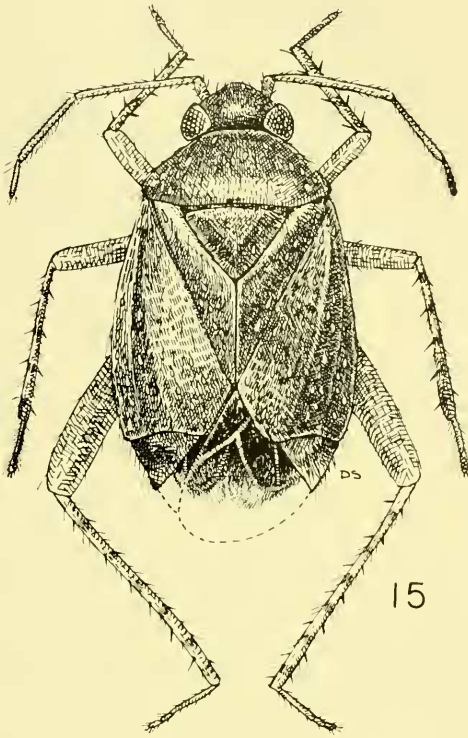


FIGURE 15. *Rhinacloa rubescens* Carvalho, new species. Female.

General color reddish brown; head, antennae and eyes darker, tending to fuscous brown; membrane fuscous; coxae fuscous brown, pair I towards apex, extreme apices of II and III, trochanters, pale to yellowish; femora reddish, tibiae pale with dark spines having dark spots at base, tarsi tipped with fuscous; rostrum pale, fuscous apically; abdomen reddish, genital segment yellowish.

Rostrum attaining middle coxae.

Genitalia: Aedeagus (fig. 16a) with characteristic vesica. Left clasper (fig. 16b) and right clasper (fig. 16c) as illustrated.

FEMALE. Similar to male in color. Length 2.3 mm., width 1.2 mm., vertex 0.32 mm., second antennal segment, 0.5 mm. Females of this genus show broader vertex than males. The space between eye and buccula is also larger since the second antennal segment is much more slender and slightly incrassate towards apex (cylindrical in the males).

HOLOTYPE. Male, Galápagos Archipelago, FLOREANA, Black Beach, II-14-1964 (Usinger).

ALLOTYPE. Female, same data as holotype.

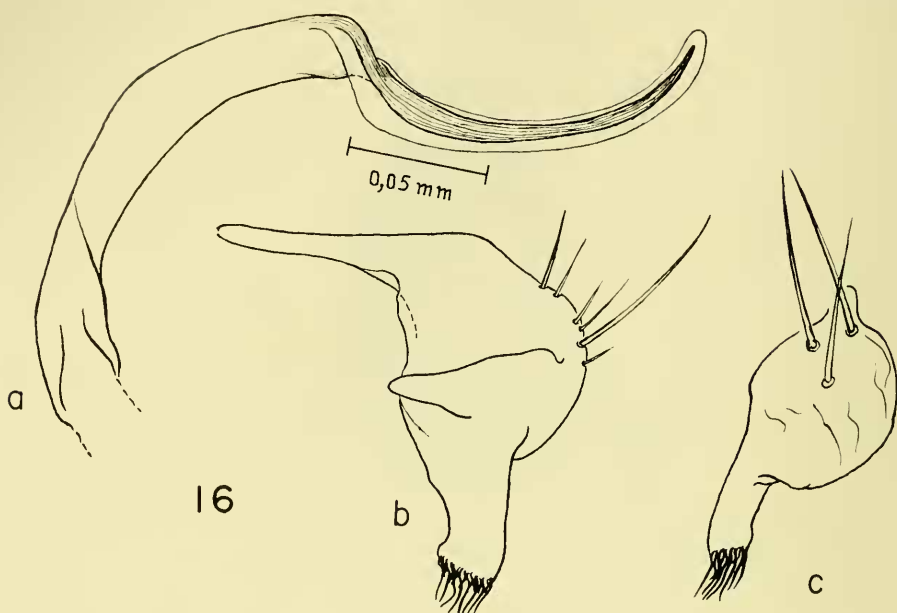


FIGURE 16. *Rhinacloa rubescens* Carvalho, new species: a, Aedeagus; b, Left clasper; c, Right clasper.

PARATYPES. Two males, same data as type, one taken on *Euphorbia*, II-17-1964.

ADDITIONAL SPECIMENS. 4 ♀♀, same data as type.

This species differs from others in the genus by its color and by the structure of the aedeagus.

TRIBE DICYPHINI

Key to Genera

1. Eyes small, removed from pronotum by a distance equal or greater than thickness of second antennal segment; a post-ocular longitudinal black fascia present (fig. 17a) *Macrolophus*
- Eyes large, removed from pronotum by a distance smaller than thickness of second antennal segment; a post-ocular longitudinal black fascia absent (fig. 17b) *Cyrtopeltis*

Genus MACROLOPHUS Fieber

Key to Galápagos Species

1. Spots on external angle of corium and subapical internal area of cuneus, black *M. punctatus*
- Hemelytra unicolorous, without the spots mentioned above *M. innotatus*

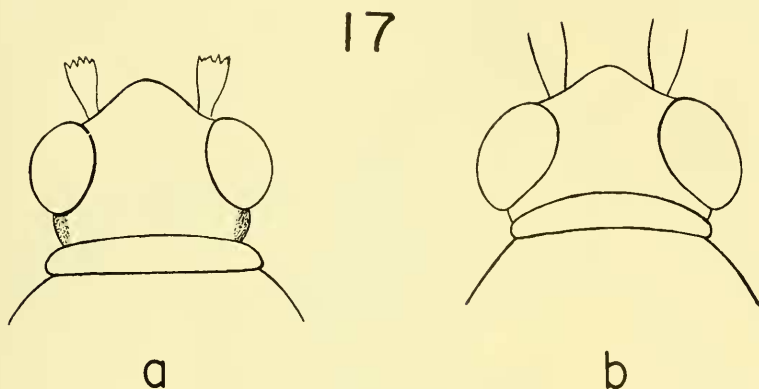


FIGURE 17. Head seen from above: a, *Macrolophus*; b, *Cyrtopeltis*.

9. *Macrolophus innotatus* Carvalho, new species.

(Figures 18, 19.)

Characterized by its color and structure of vesica of aedeagus.

MALE. Length 3.3 mm., width 1.5 mm. *Head:* Length 0.2 mm., width 0.5 mm., vertex 0.22 mm. *Antennae:* Segment I, length 0.2 mm.; II, 0.7 mm.; III, 0.7 mm.; IV, 0.4 mm. *Pronotum:* Length 0.4 mm., width at base 0.9 mm.

General color lemon yellow to yellowish testaceous; eyes brown, segment I of antenna and apex of II segment, black; a brownish fascia posterior to eye, usually continuing very faintly on pronotum where it enlarges towards posterior border, area between calli and collar paler; extreme apices of scutellum, clavus and cuneus, fuscous; underside of body yellowish testaceous, tarsi and rostrum tipped with fuscous.

Rostrum reaching middle coxae.

Genitalia: Aedeagus (fig. 19a) with indication of four sclerotized spiculi on vesica, as shown in figure. Left clasper (fig. 19b) falciform, with setae on dorsal side. Right clasper (fig. 19c) very small and simple.

FEMALE. Similar to male in color, slightly more robust. Length 3.5 mm., width 1.1 mm.

HOLOTYPE. Male, Galápagos Archipelago, SAN CRISTÓBAL: Progreso, II-23-1964 (Usinger).

ALLOTYPE. Female, same data as holotype.

PARATYPES. 1 ♂ and 1 ♀, same data as types; SANTA CRUZ: 1 ♂, N. Academy Bay, II-20-1964, Grassland, 2100 feet.

ADDITIONAL SPECIMENS. 19 ♂♂, 21 ♀♀, same data as type.

This species approaches in general aspect *Macrolophus basicornis* (Stål, 1860), but differs from it by the lack of black spots on corium and by the different structure of the male aedeagus.

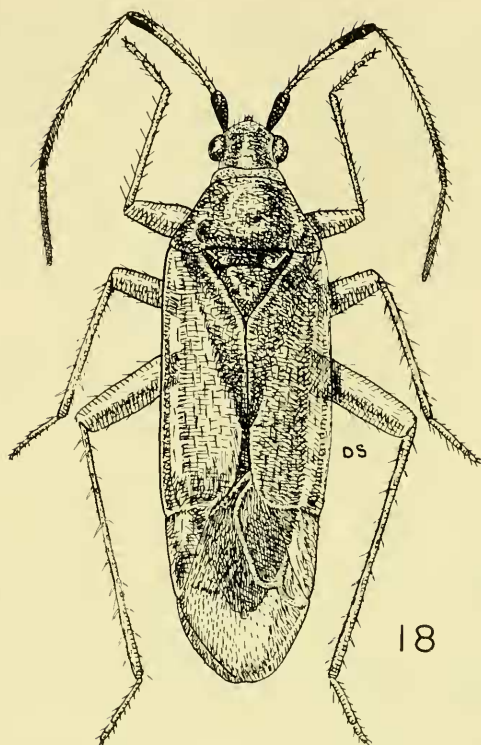


FIGURE 18. *Macrolophus innotatus* Carvalho, new species. Female.

10. *Macrolophus punctatus* Carvalho, new species.

(Figure 20.)

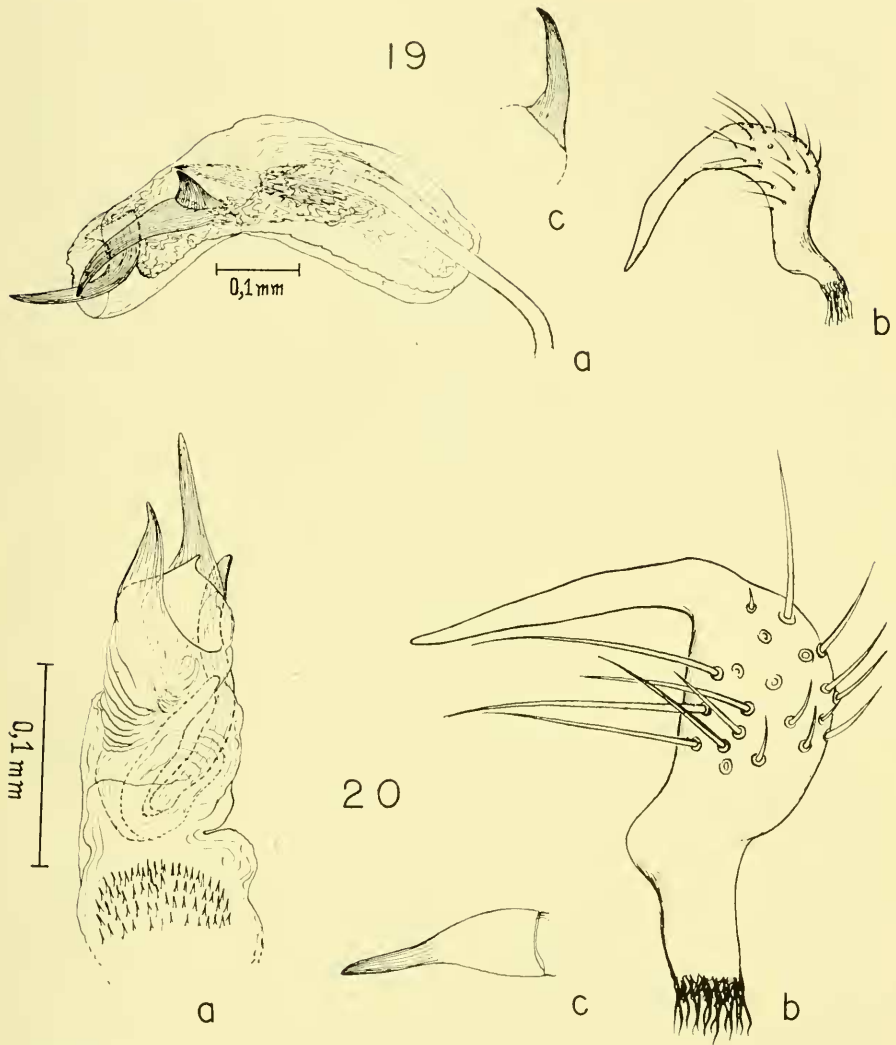
Characterized by its color and structure of male genitalia.

MALE. Length 2.8 mm., width 0.7 mm. *Head*: Length 0.1 mm., width 0.3 mm., vertex 0.2 mm. *Antennae*: Segment I, length 0.2 mm.; II, 0.8 mm.; III, 0.6 mm.; IV, 0.2 mm. *Pronotum*: Length 0.3 mm., width at base 0.6 mm.

General color pale yellow to lemon or golden yellow; segment I of antennae and extreme apex of II, black to fuscous; fascia on neck, behind eye, brownish to black; two small roundish spots on apical area of exocorium and two larger ones on subapical area of cuneus internally, black to fuscous; scutellum and clavus slightly infuscate in one specimen; membrane fuscous with paler area beyond tip of cuneus; underside of body totally pale yellow to lemon yellow.

Rostrum reaching middle coxae.

Genitalia: Aedeagus (fig. 20a) with vesica showing spiny lobes and three distinct spiculi. Left clasper (fig. 20b) as shown in figure. Right clasper (fig. 20c) very small, pointed apically.



FIGURES 19-20. *Macrolophus* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 19. *M. innotatus* Carvalho, new species; figure 20. *M. punctatus* Carvalho, new species.

FEMALE. (See below.)

HOLOTYPE. Male, Galápagos Archipelago, SANTA CRUZ: E. slope, 160 m., III-16-1964 (Cavagnaro).

PARATYPE. Male, same data as type.

The female has been discovered in additional material and is described below by Gagné:

FEMALE. Differing from male as follows: Length 3.10 mm. (2.87 to 3.10 mm.); width 0.82 mm. (0.82 to 0.90 mm.). *Head*: Length 0.38 mm. (0.38 to 0.40 mm.); width 0.37 mm. (0.37 to 0.38 mm.); vertex width 0.19 mm. (0.19 to 0.23 mm.). *Antennae*: I, 0.26 mm. (0.26 to 0.28 mm.); II, 0.68 mm. (0.63 to 0.68 mm.); III, 0.65 mm. (0.63 to 0.66 mm.); IV, 0.32 mm. (0.32 to 0.34 mm.). *Pronotum*: Length 0.35 mm. (0.35 to 0.36 mm.); width 0.70 mm. (0.67 to 0.71 mm.). *Rostrum*: Length 1.16 mm. (1.13 to 1.16 mm.); reaching hind coxae. Agrees exactly with holotype in color and maculation.

NEALLOTYPE. Female, Galápagos Archipelago, Isla Santa Cruz, Horneman Farm, 220 m., III-10-1964 (Cavagnaro).

ADDITIONAL SPECIMENS. SANTA CRUZ: 3 ♂♂, 2 ♀♀, Horneman Farm, 220 m., III-10-1964 (Cavagnaro); 1 ♂, same data, III-18-1964; 2 ♂♂, same data, IV-5-1964; 5 ♂♂, E. slope, 160 m., IV-16-1964 (Cavagnaro).

This species differs from others in the genus, especially from *Macrolophus cuiabanus* Carvalho, 1945 and *Macrolophus aragarsanus* Carvalho, 1945, by the structure of the aedeagus of the male and by the subapical fuscous or black spot situated internally on the cuneus. On the two species mentioned above this spot is apical.

Genus CYRTOPELTIS Fieber

Key to Galápagos Species

(Revised by Gagné to include new species)

1. Color pale flavescent to greenish, the extreme apices of corium and cuneus black or fuscous; segment II of antennae basally and median ring on segment I, black to fuscous (fig. 21) *C. modesta*
- Color yellowish to pale translucent; antennae unicolorous 2
2. Males 3
- Females 7
3. Antenna I subequal to width of vertex; apex of dorsal bifurcation of pygophore short and blunt and with an apical tuft of setae (fig. 22a) *C. gummiferae*
- Antenna I greater than width of vertex; apex of dorsal bifurcation of pygophore tapering and finger-like, variously clothed but never with an apical tuft of setae 4
4. Rostrum not surpassing apices of hind coxae 5
- Rostrum surpassing apices of hind coxae 6
5. Exceeding 2.60 mm. in length; dorsal bifurcation of pygophore glabrous with apex acute (fig. 24a) *C. affinis*
- Less than 2.60 mm. long; dorsal bifurcation of pygophore with 3 distal setae dorsally, apex rounded (fig. 23a) *C. helleri*
6. Antenna II longer than width of pronotum; lacking two distinct fields of bristles on dorsum of left clasper (fig. 25c); dorsal bifurcation of pygophore strongly hooked distally and with two setae near apex (fig. 25a) *C. arida*
- Antenna II subequal or less than width of pronotum; 2 distinct fields of bristles on dorsum of left clasper (fig. 26c); dorsal bifurcation of pygophore gradually curved inwardly and not hooked downwardly at its apex, glabrous (fig. 26a) *C. floreanae*
7. Antenna II subequal or less than width of vertex *C. gummiferae*

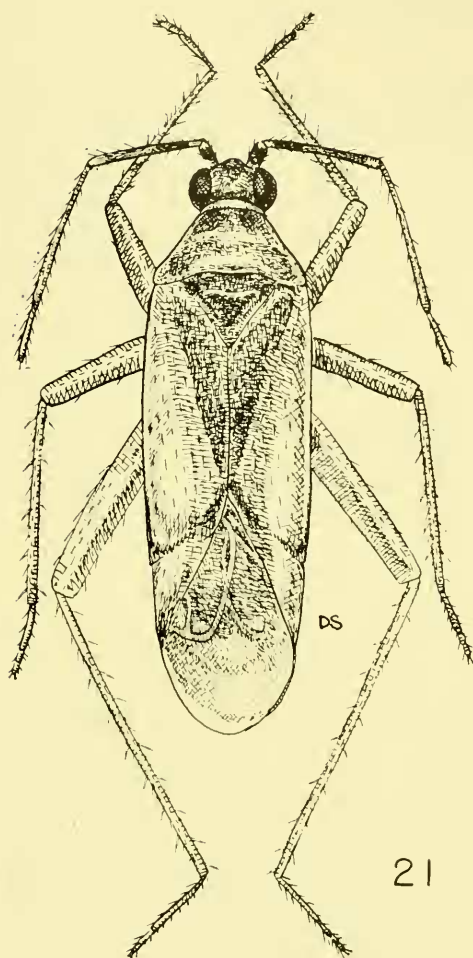


FIGURE 21. *Cyrtopeltis (Engytatus) modesta* (Distant). Male.

- | | |
|---|---------------------|
| – Antenna II greater than width of vertex | 8 |
| 8. Rostrum surpassing coxal bases, reaching base of abdominal V | 9 |
| – Rostrum not surpassing coxae, reaching posterior of metacoxae at the most | 10 |
| 9. Species less than 2.35 mm. long | <i>C. helleri</i> |
| – Species greater than 2.35 mm. long | <i>C. arida</i> |
| 10. Antenna II usually less than width of pronotum at base; species less than 2.60 mm long | <i>C. floreanae</i> |
| – Antenna II usually greater than width of pronotum at base; species greater than 2.60 mm. long | <i>C. affinis</i> |

11. *Cyrtopeltis* (*Engytatus*) *gummiferae* Gagné, new species.²

(Figure 22.)

MALE. Length 2.35 mm. (2.35 to 2.67 mm.), widest at base of pronotum. *Head*: Length 0.289 mm. (0.238 to 0.314 mm.), width 0.314 mm. (0.314 to 0.382 mm.), vertex width 0.170 mm. (0.170 to 0.195 mm.) with long erect setae, tylus and frons dark yellow, eyes brown. *Antennae*: I, 0.178 mm. (0.178 to 0.204 mm.), subglabrous but with the usual 1–2 spine-like setae interiorly; II, 0.407 mm. (0.407 to 0.510 mm.), vestiture more recumbent than on III and IV; III, 0.416 mm. (0.416 to 0.425 mm.); IV, 0.255 mm. (0.246 to 0.255 mm.), yellowish-brown. *Pronotum*: Length 0.323 mm. (0.323 to 0.340 mm.), width 0.586 mm. (0.586 to 0.646 mm.), long erect setae dorsally, longest on collar; propleura glabrous. Vestiture of scutellum and hemelytra as on dorsum of pronotum. *Rostrum*: Length 0.875 mm. (0.875 to 0.892 mm.), reaching middle of hind coxae. *Abdomen*: Dorsal bifurcation of pygophore with a weakly developed inwardly projecting apical projection and an apical tuft of setae (fig. 22a); ventral pygophore bifurcation strongly elbowed subdistally when viewed from the rear and ending in a trapezoidal knob projecting more acutely to left than right (fig. 26b).

Genitalia: Claspers and aedeagus as illustrated (figs. 26c, d, e) and agreeing with the subgeneric type.

FEMALE. Differing from the male as follows: Length 2.50 mm. (2.50 to 2.75 mm.). *Head*: Length 0.280 mm. (0.280 to 0.340 mm.), width 0.382 mm. (0.331 to 0.391 mm.), vertex width 0.187 mm. (0.178 to 0.229 mm.). *Antennae*: I, 0.170 mm. (0.170 to 0.187 mm.); II, 0.433 mm. (0.433 to 0.484 mm.); III, 0.391 mm. (0.348 to 0.416 mm.); IV, 0.246 mm. (0.229 to 0.273 mm.). *Pronotum*: Length 0.331 mm. (0.331 to 0.357 mm.), width 0.561 mm. (0.561 to 0.637 mm.), setae more recumbent and shorter. Vestiture of hemelytra and scutellum more erect and longer than on dorsum of pronotum. *Rostrum*: Length 0.850 mm. (0.850 to 0.935 mm.), reaching base of fourth abdominal segment.

HOST PLANT. *Scalesia gummifera* Hooker.

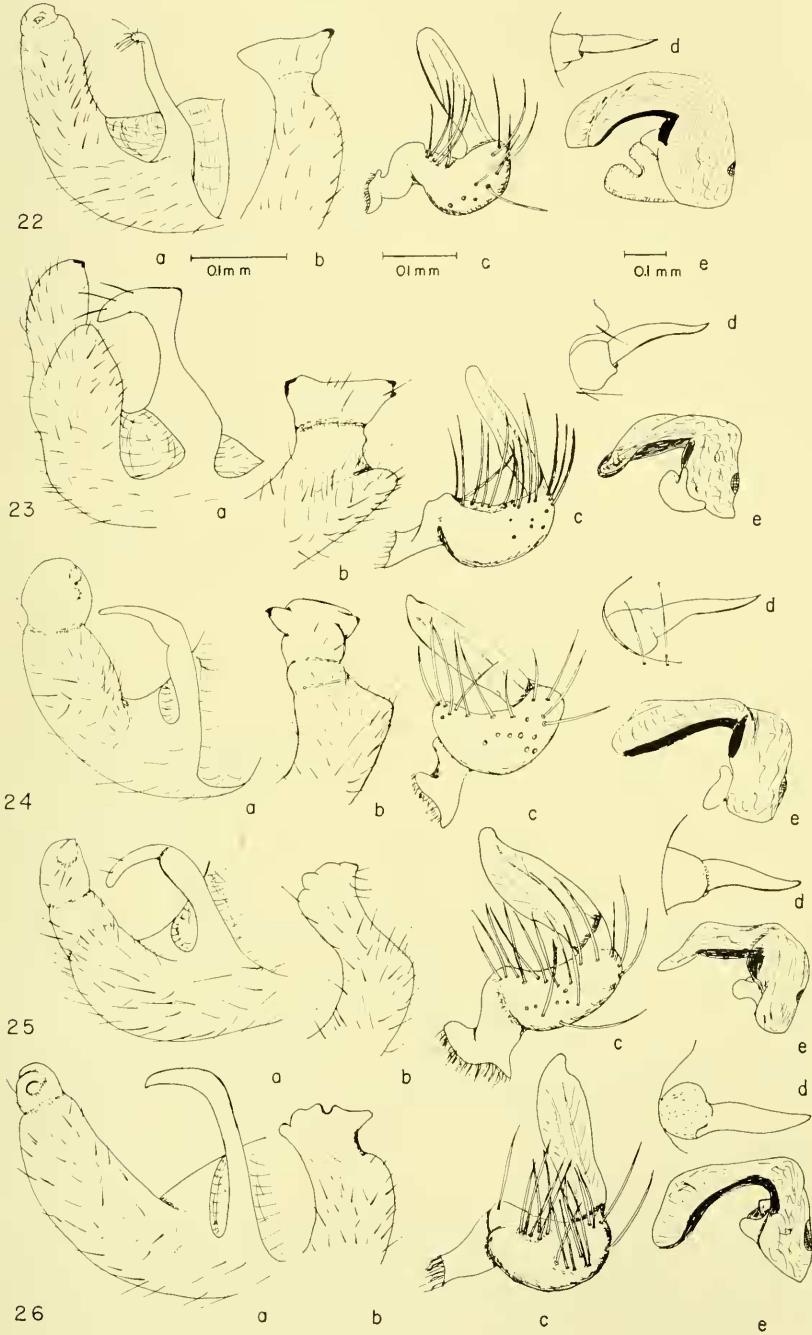
HOLOTYPE. Male.

ALLOTYPE. Female.

PARATYPES. Six males, thirteen females, Galápagos Archipelago, ISABELA ISLAND, Tagus Cove, I-30-1964, Ex *Scalesia gummifera* (Usinger).

² In all measurements given in the *Cyrtopeltis* species described by Gagné, the first dimension is that of the holotype or allotype; the variation, if any, follows in brackets.

FIGURES 22–26. *Cyrtopeltis* (*Engytatus*) species: a, Pygophore, left lateral; b, Pygophore, terminal; c, Left clasper; d, Right clasper; e, Aedeagus. Figure 22. *C. (E.) gummiferae* Gagné, new species; figure 23. *C. (E.) helleri* Gagné, new species; figure 24. *C. (E.) affinis* Gagné, new species; figure 25. *C. (E.) arida* Gagné, new species; figure 26. *C. (E.) floreanae* Gagné, new species.



The endemic species of *Cyrtopeltis* are represented by a complex of five closely related species which agree quite closely with the above description. They are best differentiated from each other by the shape of the pygophore and by its dorsal bifurcation, and to a lesser extent, by the shape of the aedeagus. The shape of the claspers is quite uniform. All are associated with various endemic species of *Scalesia* (Compositae) in contrast to the nearly cosmopolitan *C. modesta*, which is associated with tobacco and tomatoes in the Galápagos and elsewhere. Some insular endemism is evident in the species before us; only *C. affinis* and *C. arida* occur on the same island (Santa Cruz). All the native species are generally yellowish to pale translucent, but it is indicated that living specimens have a greenish tinge. All have brown, sparsely setaceous eyes and are comparatively uniform in dimensions.

The conformity of their pygophores with the dorsal bifurcations not exceeding the ventral bifurcations in length closely approaches the situation in *C. (E.) lacteus* (Spinola) from mainland Chile with which this complex may have affinities.

Cyrtopeltis (E.) gummiiferae is differentiated by its contrastingly darker yellow frons and vertex, the subglabrous antenna I, the darker antenna IV, the dorsal bifurcation of the pygophore with its short apical projection bearing a tuft of setae, and by its smaller size.

12. *Cyrtopeltis (Engytatus) helleri* Gagné, new species.

(Figure 23.)

MALE. Length 2.55 mm. (2.52 to 2.55 mm.). *Head*: Length 0.365 mm. (0.365 to 0.374 mm.); width 0.425 mm. (0.425 to 0.443 mm.); vertex width 0.178 mm. (0.170 to 0.187 mm.); tylus and frons not noticeably darker yellow, setae sparser on dorsum than in *C. gummiiferae*. *Antennae*: I, 0.221 mm. (0.212 to 0.229 mm.), sparsely setaceous; II, 0.620 mm. (0.620 to 0.646 mm.), setae more recumbent on proximal half than on distal half; III, 0.578 mm. (0.578 to 0.637 mm.); IV, 0.297 mm. (0.297 to 0.323 mm.), same color as body. *Pro-notum*: Length, 0.374 mm. (0.357 to 0.374 mm.); width 0.595 mm. (0.595 to 0.620 mm.); vestiture as in *C. gummiiferae*. *Rostrum*: Length, 0.977 mm. (0.977 to 0.986 mm.), reaching middle of mesocoxa. Legs pale. *Pygophore*: Distal hook of dorsal bifurcation long, lacking the apical tuft of setae, but with three setae dorsally (fig. 23a); ventral bifurcation, when viewed from the rear, strongly elbowed subdistally and projected to the right in a subdistal hump; distal knob evenly trapezoidal (fig. 23b).

Claspers and aedeagus as illustrated (figs. 23c, d, e).

FEMALE. Differing from male as follows: Length 2.27 mm. (2.25 to 2.30 mm.). *Head*: Length 0.374 mm. (0.348 to 0.382 mm.); width 0.391 mm. (0.391 to 0.416 mm.); vertex width 0.204 mm. (0.178 to 0.204 mm.); uniformly pale yellow. *Antennae*: I, 0.212 mm. (0.187 to 0.221 mm.); II, 0.518 mm. (0.493

to 0.518 mm.), setae evenly recumbent; III, 0.484 mm. (0.467 to 0.501 mm.); IV, 0.280 mm. (0.255 to 0.280 mm.); same color as body; setae suberect on III and IV. *Pronotum*: Length 0.348 mm. (0.331 to 0.348 mm.), width 0.637 mm. (0.620 to 0.637 mm.). *Rostrum*: Length 0.935 mm. (0.926 to 0.952 mm.); reaching base of fifth abdominal segment.

HOST PLANT. *Scalesia helleri* Robinson.

HOLOTYPE. Male.

ALLOTYPE. Female.

PARATYPES. Five males, seven females, Galápagos Archipelago, BARRINGTON ISLAND, II-20-1964, Ex *Scalesia helleri* (Usinger).

This species is most closely related to *C. affinis* but is distinctly smaller (less than 2.60 mm. long) and otherwise separated by characters given in the key.

13. *Cyrtopeltis (Engytatus) affinis* Gagné, new species.

(Figure 24.)

MALE. Length 2.65 mm. (2.65 to 2.80 mm.). *Head*: Length 0.314 mm. (0.279 to 0.348 mm.); width 0.391 mm. (0.391 to 0.408 mm.); vertex width 0.187 mm. (0.187 to 0.204 mm.); vestiture and color as in *C. helleri*. *Antennae*: I, 0.255 mm. (0.229 to 0.263 mm.), sparsely setaceous; II, 0.705 mm. (0.688 to 0.782 mm.), setae evenly subrecumbent; III, 0.603 mm. (0.595 to 0.629 mm.); IV, 0.340 mm. (0.331 to 0.348 mm.), same color as body. *Pronotum*: Length 0.374 mm. (0.365 to 0.399 mm.); width 0.620 mm. (0.620 to 0.680 mm.). Dorsal vestitures as in *C. gummiferac*. *Rostrum*: Length 1.06 mm. (1.06 to 1.07 mm.); reaching middle of mesocoxae. Dorsal bifurcation of pygophore developed as in *C. helleri*, but narrowing distally and glabrous (fig. 24a); ventral bifurcation of pygophore with a tooth-like projection on each side of terminus, elbowed subdistally but lacking the sharply projecting hump seen in *C. helleri* (fig. 24b).

Claspers and aedeagus as illustrated (figs. 24c, d, e).

FEMALE. Length 2.82 mm. (2.67 to 2.82 mm.). *Head*: Length 0.391 mm. (0.365 to 0.391 mm.); width 0.425 (0.391 to 0.425 mm.); vertex width 0.204 mm. (0.195 to 0.212 mm.). *Antennae*: I, 0.221 mm. (0.221 to 0.246 mm.); II, 0.663 mm. (0.603 to 0.714 mm.); III, 0.569 mm. (0.569 to 0.603 mm.); IV, 0.331 mm. (0.297 to 0.331 mm.). *Pronotum*: Length 0.382 mm. (0.365 to 0.408 mm.); width 0.639 mm. (0.629 to 0.663 mm.). *Rostrum*: Length 1.07 mm. (1.02 to 1.10 mm.), reaching posterior margin of metacoxa.

HOST PLANT. *Scalesia affinis* Hooker.

HOLOTYPE. Male.

ALLOTYPE. Female.

PARATYPES. Four males, six females, Galápagos Archipelago, Darwin Research Station, Trail, Academy Bay, SANTA CRUZ ISLAND, I-26-1964, Ex *Scalesia affinis* (Kuschel); 1 ♂ paratype, same locality, I-25-1964; 2 ♂♂, 2 ♀♀ paratypes, same locality, I-23-1964 (Usinger).

This species is most closely related to *C. arida*, but the characters given in the key and the shape of the aedeagus will separate them.

14. *Cyrtopeltis (Engytatus) arida* Gagné, new species.

(Figure 25.)

MALE. Length 2.92 mm. (2.67 to 2.92 mm.). *Head*: Length 0.382 mm. (0.357 to 0.382 mm.); width 0.416 mm. (0.391 to 0.416 mm.); vertex width 0.195 mm. (0.178 to 0.195 mm.); uniformly pale yellowish-white; setae shorter and sparser than *helleri*. *Antennae*: I, 0.246 mm. (0.221 to 0.246 mm.), sparsely setaceous; II, 0.705 mm. (0.680 to 0.705 mm.), setae evenly subrecumbent; III, 0.646 mm.; IV, 0.323 mm. (0.306 to 0.323 mm.), same color as body. *Pronotum*: Length 0.374 mm. (0.340 to 0.374 mm.); width 0.637 mm. (0.620 to 0.637 mm.); pronotum, scutellum, and hemelytra uniformly pale yellowish-white; vestiture as in *helleri*. *Rostrum*: Length 1.03 mm. (1.01 to 1.03 mm.), just reaching metacoxae. Dorsal bifurcation of pygophore developed as in *affinis*, but with two setae on dorsum of distal end (fig. 25a); ventral bifurcation, when viewed from rear, evenly curved to the left sub-distally, terminating in four weakly developed lobes, of which the extreme right is the most distal (fig. 25b).

Claspers and aedeagus as illustrated (figs. 25c, d, e).

FEMALE. Differing from male as follows: Length 2.50 mm. (2.45 to 2.52 mm.). *Head*: Length 0.408 mm. (0.399 to 0.408 mm.); width 0.416 mm. (0.408 to 0.416 mm.); vertex width 0.195 mm. (0.195 to 0.204 mm.); yellowish-white dorsally behind and between eyes, remainder pale yellowish. *Antennae*: I, 0.221 mm. (0.204 to 0.221 mm.); II, 0.552 mm. (0.552 to 0.561 mm.); III, 0.476 mm. (0.476 to 0.561 mm.); IV, 0.289 mm. *Pronotum*: Length 0.348 mm. (0.340 to 0.348 mm.); width 0.620 mm. (0.620 to 0.629 mm.); pronotum, scutellum and hemelytra pale yellow. *Rostrum*: Length 0.986 mm. (0.986 to 0.994 mm.), reaching base of abdominal IV.

HOST PLANT. *Scalesia* species.

HOLOTYPE. Male.

ALLOTYPE. Female.

PARATYPES. Six males, 3 females, Galápagos Archipelago, 40 m. above Academy Bay, Upper Arid Zone, SANTA CRUZ ISLAND, I-23-1964; Ex *Scalesia* (Usinger).

Most closely related to *C. affinis* and differentiated as discussed under that species.

15. *Cyrtopeltis (Engytatus) floreanae* Gagné, new species.

(Figure 26.)

MALE. Length 2.42 mm. (2.42 to 2.85 mm.). *Head*: Length 0.382 mm. (0.382 to 0.391 mm.); width 0.382 mm. (0.382 to 0.399 mm.); vertex width 0.221 mm. (0.212 to 0.221 mm.); pale yellow; vestiture as in *C. arida*. *Antennae*: I, 0.238 mm. (0.238 to 0.246 mm.), sparsely setaceous; II, 0.654 mm.,

setae uniformly subrecumbent; III, 0.552 mm.; IV, 0.280 mm., same color as body. *Pronotum*: Length 0.365 mm. (0.365 to 0.382 mm.); width 0.637 mm. (0.637 to 0.654 mm.); pronotum, scutellum and hemelytra evenly pale yellow; vestiture as in *C. gummiiferae*. *Rostrum*: Length 1.07 mm. (1.07 to 1.08 mm.), just reaching metacoxae. Dorsal bifurcation of pygophore most closely resembling *C. affinis* and also glabrous (fig. 26a); ventral bifurcation, when viewed from rear, more closely resembling *C. arida*, but with a median distal notch separating weakly developed lobes (fig. 26b).

Claspers and aedeagus as illustrated (figs. 26c, d, e); dorsally the left clasper has two distinct fields of bristles, which are not so condensed in the other species.

FEMALE. Length 2.50 mm. (2.50 to 2.55 mm.). *Head*: Length 0.399 mm. (0.399 to 0.425 mm.); width 0.416 mm.; vertex width 0.204 mm. (0.204 to 0.205 mm.). *Antennae*: Missing in the type; a paratype is as follows: I, 0.229 mm.; II, 0.646 mm.; III and IV, broken. *Pronotum*: Length 0.374 mm. (0.365 to 0.382 mm.); width 0.654 mm. (0.646 to 0.654 mm.). *Rostrum*: Length 1.04 mm.; reaching posterior margins of metacoxae.

HOST PLANT. *Scalesia* species.

HOLOTYPE. Male, Galápagos Archipelago, Wittmer Farm, FLOREANA ISLAND, II-15-1964 (Usinger).

ALLOTYPE. Female.

PARATYPES. One male, two females, Black Beach, II-17-64, Ex *Scalesia*, 1 ♂ paratype, same data as allotype except, II-14-64 (no host indicated).

This species is most closely related to *C. arida* from which it is separated by the characters given in the key and by the shape of the aedeagus. The two fields of bristles on the dorsum of the left clasper are unique among the species in the Archipelago.

The females are in poor condition and the allotype, in addition to lacking antennae, is also missing the left middle and hind legs.

16. *Cyrtopeltis (Engytatus) modesta* (Distant).

(Figures 21, 27.)

Engytatus geniculatus REUTER, 1876, Öfv. K. Vet.-Akad. Forh., vol. 36, no. 2, p. 83; preoccupied by *C. geniculata* Fieber, 1861. VAN DUZEE, 1937, Proc. Acad. Sci. Calif., ser. 4, vol. 22, p. 116.

Neosilia modesta DISTANT, 1893, Biol. Cent.-Amer. Rhync., vol. 1, p. 447. CARVALHO, 1952, Ann. Mag. Nat. Hist., ser. 12, vol. 5, p. 165.

Characterized by its color and structure of male genitalia.

MALE. Length 3.3 mm., width 0.9 mm. *Head*: Length 0.2 mm., width 0.5 mm., vertex 0.17 mm. *Antennae*: Segment I, length 0.2 mm.; II, 0.8 mm.; III, 0.8 mm.; IV, 0.4 mm. *Pronotum*: Length 0.3 mm., width at base 0.8 mm.

General color pale flavescent to pale greenish; eyes, median ring on segment I of antenna, segment II at base and apex or sometimes totally, segment III and IV, apices of embolium and cuneus, extreme base of tibiae, segment III

of tarsi, fuscous to black; femora with fuscous to black points on apical half; underside of body flavescent to greenish. In some specimens the collar, calli and body beneath are noticeably green. The fuscous area on apex of embolium and fuscous markings of antennae may be absent. On fully mature specimens the apex of clavus and corresponding area of corium may be darker than remaining portions of hemelytra.

Rostrum reaching to hind coxae.

Genitalia: Aedeagus (fig. 27a) with a sclerotized band on theca, as seen in figure. Left clasper (fig. 27b) provided with long and stout setae, the apical portion blade-like. Right clasper (fig. 27c) small and inconspicuous. Pygophore characteristically bifurcated posteriorly, the dorsal branch longer and more slender than main arm, as illustrated (fig. 27d).

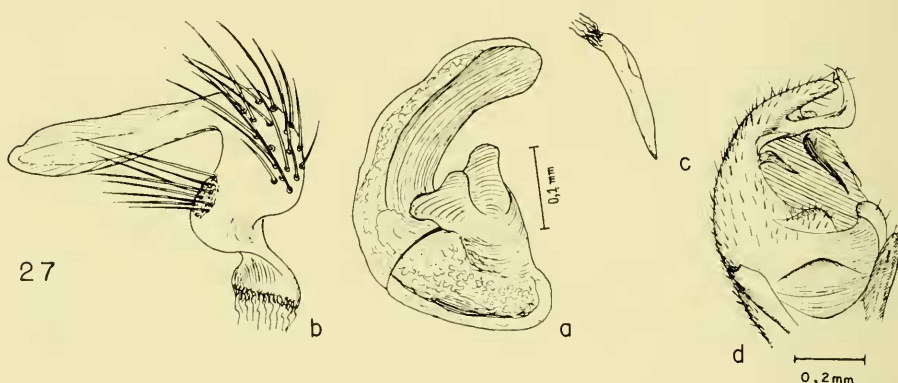


FIGURE 27. *Cyrtopeltis (Engytatus) modesta* (Distant): a, Aedeagus; b, Left clasper; c, Right clasper; d, Pygophore.

FEMALE. Similar to male in color and dimensions. Length 3.5 mm., width 0.9 mm.

DISTRIBUTION. North, Central and South America, Hawaii, Puerto Rico, Cuba, Grenada, Galápagos Archipelago (Santa Cruz, Floreana, Santiago), San Domingo.

SPECIMENS STUDIED. SANTA CRUZ: Academy Bay, Darwin Research Station, II-20-1964 (Cavagnaro & Schuster), 5 ♀♀; same locality, II-6-1964 (Schuster), 1 ♀; Bella Vista Trail, II-11-1964 (Cavagnaro); Horneman Farm, 220 m., II-24-1964 (Cavagnaro), 3 ♂♂, 1 ♀; Academy Bay, Darwin Research Station, III-21-1964 (Cavagnaro); 3 ♂♂, 4 ♀♀; Galápagos, Academy Bay, II-25-1964 (Ashlock), under *Portulaca*, at light, 2 ♂♂, 8 ♀♀. FLOREANA: Wittmer Farm, II-15-1964 (Usinger), 1 ♂, 2 ♀♀. SANTIAGO ISLAND: N.W. slope, 600 m., V-30-1964 (Cavagnaro), 1 ♀; E. slope, 160 m., IV-16-1964 (Cavagnaro), 1 ♂.

ADDITIONAL SPECIMENS. SANTA CRUZ: 2 ♂♂, 6 ♀♀, Horneman Farm, 220 m., III-10-1964 (Cavagnaro); 4 ♂♂, 1 ♀, same data, III-18-1964; 9 ♂♂, 9 ♀♀, same data, V-3-1964; 5 ♂♂, 3 ♀♀, same data, V-7-1964; 1 ♀, Darwin Research Station, Academy Bay, I-25-1964 (Kuschel); 1 ♀, same locality, II-10-1964, at light (Cavagnaro & Schuster); 1 ♀, Bella Vista Trail, II-11-1964, same collectors; 1 ♂, 4 ♀♀, Bella Vista, II-26-1964 (Usinger); 1 ♂, Table Mountain, 440 m., IV-16-1964 (Cavagnaro). FLOREANA: 3 ♂♂, 10 ♀♀, Wittmer Farm, II-15-1964 (Usinger). SANTIAGO: 1 ♂, N.W. slope, 300 m., V-30-1964 (Cavagnaro).

This species is characterized by the structure of its pygophore and by its color, especially the dark points present on the apical portion of femora.

It occurs on tobacco, tomato and several native plants in the Neotropical Region.

SUBFAMILY ORTHOTYLINAE

Genus *Galapagocoris* Carvalho, new genus

This genus belongs to the Orthotylini and to the group of genera which possess antennae becoming gradatively thinner towards the apex, pronotum smooth, body clothed with a single type of pubescence, eyes rounded posteriorly and set in front, at or near middle of head, removed from anterior margin of pronotum by a space equal to thickness of first antennal segment, areola of membrane sclerotized, the smaller cell obsolete.

Species of small size, impunctate, with fairly long and erect pubescence, elongate.

Head with frons protruding bluntly in front, eyes placed at middle of head, removed from pronotum by a space equal to thickness of first antennal segment, vertex not carinate; antennal segment I thicker than the remaining, segment II linear, five times longer than first, clypeus prominent, rostrum reaching middle of abdomen.

Pronotum narrowing markedly towards head, anterior margin straight, lateral margins slightly constricted behind calli, posterior margin broadly emarginate, calli prominent, fused and occupying anterior half of pronotum, mesoscutum and scutellum large.

Hemelytra translucent, long and erectly pilose, cuneus more than twice as long as wide at base, areola of membrane coriaceous or sclerotized, as in corium or cuneus, radial nervure obsolete. Legs long and slender, especially the hind tibiae.

TYPE OF GENUS. *Galapagocoris crockeri* (Van Duzee, 1933) new combination.

This genus approaches *Hyalochloria* Reuter, 1907, from which it differs by the antennal structure of the male and by the vertex being not depressed at the middle; from *Saileria* Hsiao, 1945, it differs by the longer cuneus, lack of marked sexual dimorphism on the head (eyes), by the length of rostrum, the antennae

and by the structure of the male genitalia (aedeagus); from *Diaphnidia* Uhler, 1895, the genus in which the species was originally placed by Van Duzee (1933), it differs by the presence of the sclerotized areola of membrane, by the much shorter cuneus, and by the eyes being placed at the middle of head; from *Paraproba* Distant, 1883, it differs by the presence of the sclerotized areola of membrane, by the shorter cuneus and by the structure of aedeagus.

17. ***Galapagocoris crockeri*** (Van Duzee), new combination.

(Figures 28, 29.)

Diaphnidia crockeri VAN DUZEE, 1933, Proc. Calif. Acad. Sci., ser. 4, vol. 21, no. 4, p. 29.

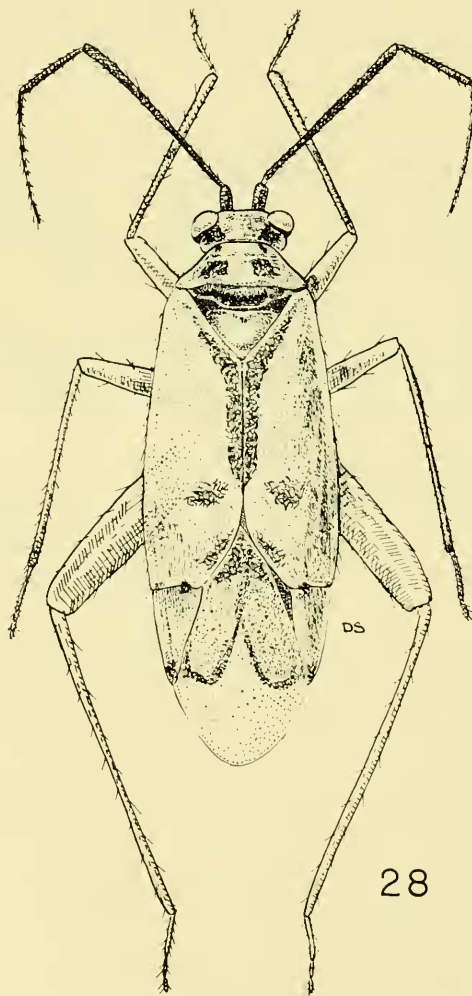


FIGURE 28. *Galapagocoris crockeri* (Van Duzee), new combination. Male.

Characterized by its color and genitalia.

MALE. Length 2.6 mm., width 0.8 mm. *Head*: Length 0.2 mm., width 0.5 mm., vertex 0.20 mm. *Antennae*: Segment I, length 0.2 mm.; II, 1.0 mm.; III, 0.5 mm.; IV, 0.4 mm. *Pronotum*: Length 0.2 mm., width at base 0.7 mm.

General color pale yellowish testaceous, elytra faintly green, with red or reddish markings, hemelytra tinged with green, with costal and subcostal nervures green on fresh specimens; corial commissure and internal margins of clavus forming a broad Y-shaped red mark, the forks of which reach almost to base of scutellum; corium with three red dots, one on basal third, another opposite to apex of clavus, the third at middle of apical margin; a similar red dot occupies the basal angle of the membrane, and the apex of membranar nervures are red; a red mark behind the inner angle of the eye, and two divergent spots are indicated on the posterior lobe of the pronotum; segment II of antenna slightly infuscated in male; tips of tarsi blackish.

In a series of specimens of this species we find individuals entirely pale yellowish, without any of the red or reddish markings pointed out above, especially females. The males become more colorful as they reach full maturity.

Rostrum reaching to apices of hind coxae. Cells of membrane sclerotized as in corium or cuneus.

Genitalia: Aedeagus (fig. 29a) of Orthotylini type, with typical spiculi as seen in figure. Left clasper (fig. 29b) hook-like, with setae on dorsal side. Right

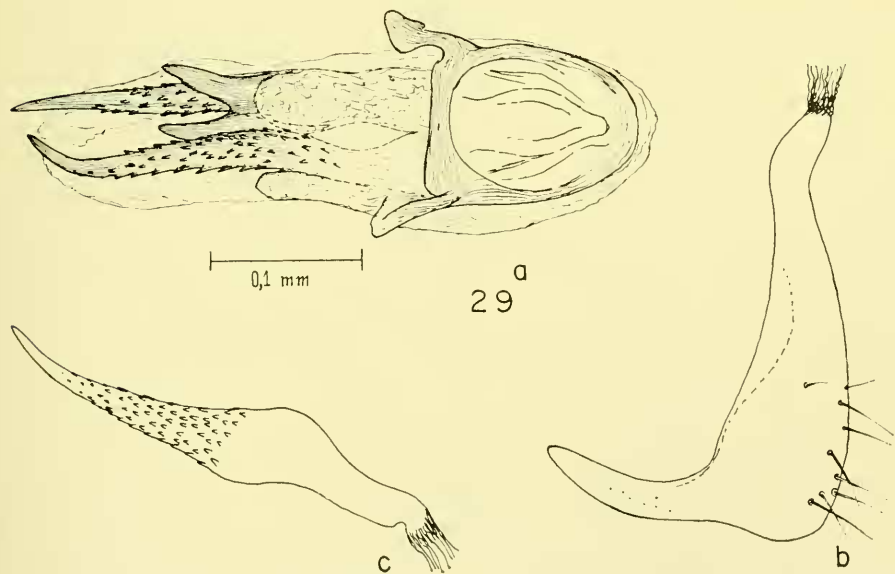


FIGURE 29. *Galapagocoris crockeri* (Van Duzee): a, Aedeagus; b, Left clasper; c, Right clasper.

clasper (fig. 29c) tapering towards apical end, with numerous small spines on its terminal portion.

FEMALE. Similar to male, with red or reddish markings absent or poorly marked, slightly more robust. Length 3.0 mm., width 1.0 mm.

DISTRIBUTION. Known previously from Santiago Island, Galápagos Archipelago.

SPECIMENS STUDIED. FLOREANA: 2 ♂♂, 3 ♀♀, II-18-1964 (Usinger); 3 ♂♂, 2 ♀♀, Wittmer Farm, II-15-1964 (Usinger). FERNANDINA: 2 ♂♂, 2 ♀♀, W. side, 1100 feet, II-5-1964. SAN CRISTÓBAL: 1 ♂, 1 ♀, II-23-1964 (Usinger). SANTA CRUZ: 2 ♂♂, 1 ♀, Darwin Research Station, Academy Bay (Schuster); 1 ♂, same locality, but 4 miles N., II-21-1964 (Ashlock); 1 ♀, same locality, but 6 miles N., II-13-1964 (Ashlock); 1 ♀, Table Mountain, 440 m., IV-16-1964 (Cavagnaro); 1 ♂, 1 ♀, E. slope, 160 m., IV-16-1964 (Cavagnaro).

ADDITIONAL SPECIMENS. FERNANDINA: 5 ♂♂, 6 ♀♀, W. side, 1100 feet, II-5-1964 (Cavagnaro). FLOREANA: 2 ♀♀, Wittmer Farm, II-15-1964 (Usinger); 1 ♀, II-18-1964, same collector. SANTA CRUZ: 1 ♂, Horneman Farm, 220 m., III-10-1964 (Cavagnaro); 2 ♂♂, 1 ♀, same data, III-25-1964; 2 ♂♂, 1 ♀, same data, IV-16-1964; 1 ♂, Table Mountain, 440 m., same data and collector; 1 ♀, Bella Vista, II-4-1964 (Usinger). SAN CRISTÓBAL: 1 ♂, 1 ♀, Progreso, above *Miconia*, II-23-1964 (Usinger).

SUBFAMILY MIRINAE

Key to Tribes

1. First segment of hind tarsi as long as or longer than second and third together (fig. 30a); pronotum without a ring-like collar, its lateral margins carinate, the carina reaching the anterior angles STENODEMINI
2. First segment of hind tarsi not as long as second and third together (fig. 30b); pronotum with a distinct ring-like collar, if lateral margins carinate, then the carina never reaching the anterior angles MIRINI

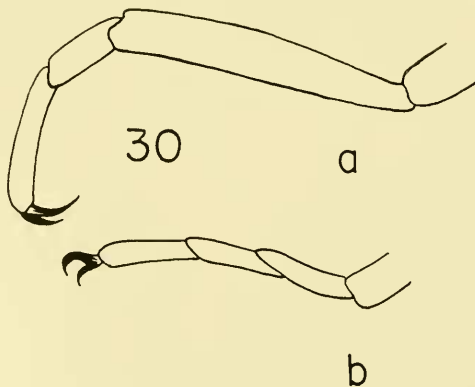


FIGURE 30. Hind tarsi: a, Stenodemini; b, Mirini.

TRIBE STENODEMINI

- 1. First antennal segment covered by long, erect pubescence, the hairs at least as long as half the width of segment *Dolichomiris*
- First antennal segment covered by very short pubescence, the hairs shorter than half the width of the segment *Trigonotylus*

Genus *Dolichomiris* Reuter

18. *Dolichomiris linearis* Reuter.

(Figures 31, 32.)

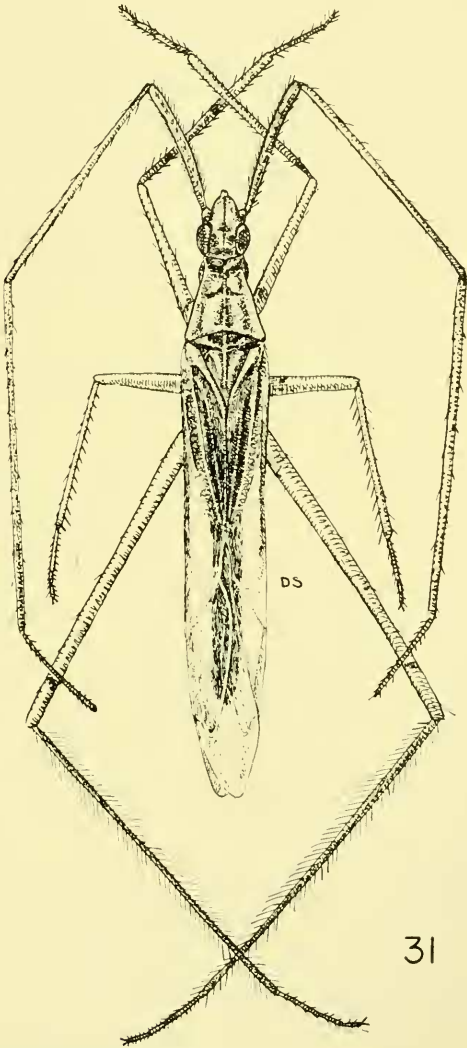


FIGURE 31. *Dolichomiris linearis* Reuter. Male.

Dolichomiris linearis REUTER, 1882, Öfv. Vet. Soc. Förh., vol. 25, p. 29.

Dolichomiris tibialis REUTER, 1892, Ann. Soc. Ent. Fr., vol. 61, p. 392.

Nostostira longula NOUALHIER, 1893, Ann. Soc. Ent. Fr., vol. 62, p. 15.

Eioneus bilineatus, DISTANT, 1893, Biol. Cent.-Amer. Rhynch., vol. 1, p. 416.

Megaloceraea graminea DISTANT, Faun. Brit. Ind. Rhynch., vol. 2, p. 424.

Eioneus gutticornis BLATCHLEY, 1926, Het. E. N. Amer., p. 674.

Characterized by its color and structure of male genitalia.

MALE. Length 7.6 mm., width 1.2 mm. *Head:* Length 0.9 mm., width 0.8 mm., vertex 0.37 mm. *Antennae:* Segment I, length 1.5 mm.; II, 3.2 mm.; III, 3.7 mm.; IV, 1.1 mm. *Pronotum:* Length 0.6 mm., width at base 1.1 mm.

General color pale greenish-yellow; head and pronotum each with three narrow reddish stripes, the median one continued back to apex of scutellum, a yellowish slender carina along middle of pronotum and scutellum; legs greenish-yellow, femora with scattered vague brownish dots, tarsi fuscous, hind tibiae and basal joint of hind tarsi red; underside of body with a reddish stripe extending from below eyes along side margin to fifth ventral segment, mesosternum and coxae with two similar stripes; antennae with segment I and base of II greenish-yellow, thickly flecked with reddish dots and beset with grayish hairs.

Rostrum reaching the hind coxae.

Genitalia: Aedeagus (fig. 32a) with a typical spiculum. Left clasper (fig. 32b) falciform, simple. Right clasper (fig. 32c) as illustrated.

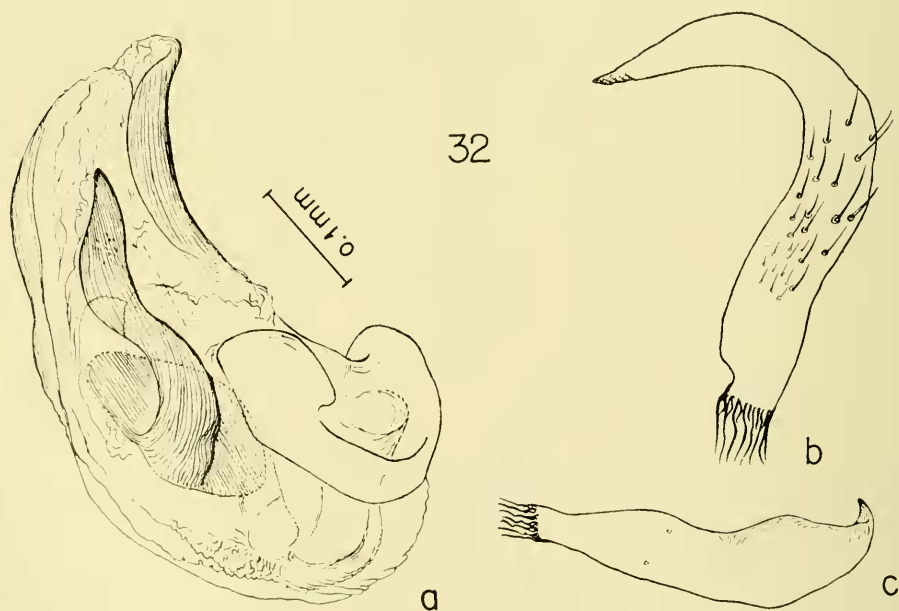


FIGURE 32. *Dolichomiris linearis* Reuter; a, Aedeagus; b, Left clasper; c, Right clasper.

FEMALE. Similar to male in color, slightly more robust. Length 9.2 mm., width 1.4 mm.

DISTRIBUTION. Africa, North, Central, and South America, India, Burma, Ceylon, Southern Europe, Madeira, Galápagos Archipelago (Fernandina, Santa Cruz, Santiago, Isabela).

SPECIMENS STUDIED. FERNANDINA: 1 ♂, 1 ♀, W. side 1100 feet, II-5-1964 (Cavagnaro); 1 ♂, S.W. side, 1000 feet, II-4-1964 (Ashlock); SANTA CRUZ: 1 ♂, 1 ♀, Academy Bay, Darwin Research Station (Schuster), II-5-1964.

ADDITIONAL SPECIMENS. FERNANDINA: 30 ♂♂, 17 ♀♀, W. side, 1100 feet, II-5-1964 (Cavagnaro). SANTA CRUZ: 2 ♂, 3 ♀, Darwin Research Station, Academy Bay, II-5-1964 (Schuster). SANTIAGO: 1 ♂, 2 ♀♀, N.W. slope, 300 m., V-30-1964 (Cavagnaro). ISABELA: 1 ♂, Tagus Cove, V-25-1964 (Willows), Templeton Crocker Expedition, 1932.

Genus *Trigonotylus* Fieber

19. *Trigonotylus lineatus* (Butler).

(Figures 33, 34.)

Miris lineata BUTLER, 1873, Proc. Zool. Soc. London, p. 89.

Trigonotylus lineatus CARVALHO AND WAGNER, 1957, Arq. Mus. Nac. R. Jan., vol. 43, p. 135.

Characterized by its color and structure of male genitalia.

MALE. Length 4.8 mm., width 0.9 mm. *Head*: Length 0.7 mm., width 0.6 mm., vertex 0.32 mm. *Antennae*: Segment I, length 0.8 mm.; II, 2.2 mm.; III, 2.0 mm.; IV, 0.7 mm. *Pronotum*: Length 0.5 mm., width at base 2.5 mm.

General color pale yellow to stramineous; three vittae on head, four vittae on pronotum (the median pair almost contiguous), two vittae on scutellum roseate; hemelytra obsoletely roseate between veins; apex of rostrum and apex of tarsus with claws. black; antennae mostly pale, first segment roseate on both sides, apical segments tending to fuscous roseate.

Genitalia: Aedeagus (fig. 34a) with a typical double curved spiculum. Left clasper (fig. 34b) falciform, as seen in figure. Right clasper (fig. 34c) hook-like, as illustrated.

FEMALE. Similar to male in color, slightly more robust. Length 5.8 mm., width 1.3 mm.

DISTRIBUTION. Galápagos Archipelago (San Cristóbal, Floreana, Isabela).

SPECIMENS STUDIED. SAN CRISTÓBAL: 2 ♂♂, VII-4-1932 (Willows); FLOREANA: 2 ♂♂, V-14-1932, Tagus Cove (Willows); ISABELA: 6 ♂♂, 2 ♀♀, V-25-1932 (Willows), Templeton Crocker Expedition, 1932.

This species belongs to the color group of *T. pulcher* Reuter and *T. pulchellus* (Hahn), but differs by the longer rostrum and by the large clypeus. The spiculum of aedeagus typifies the species.

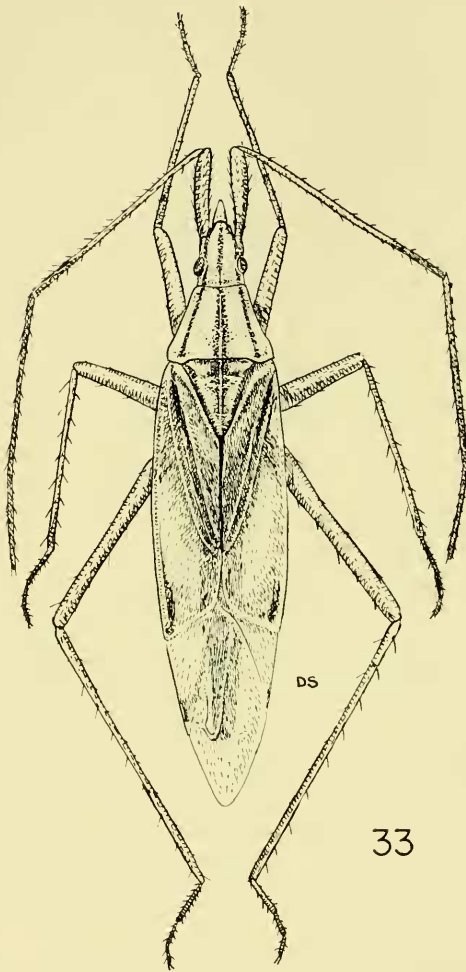


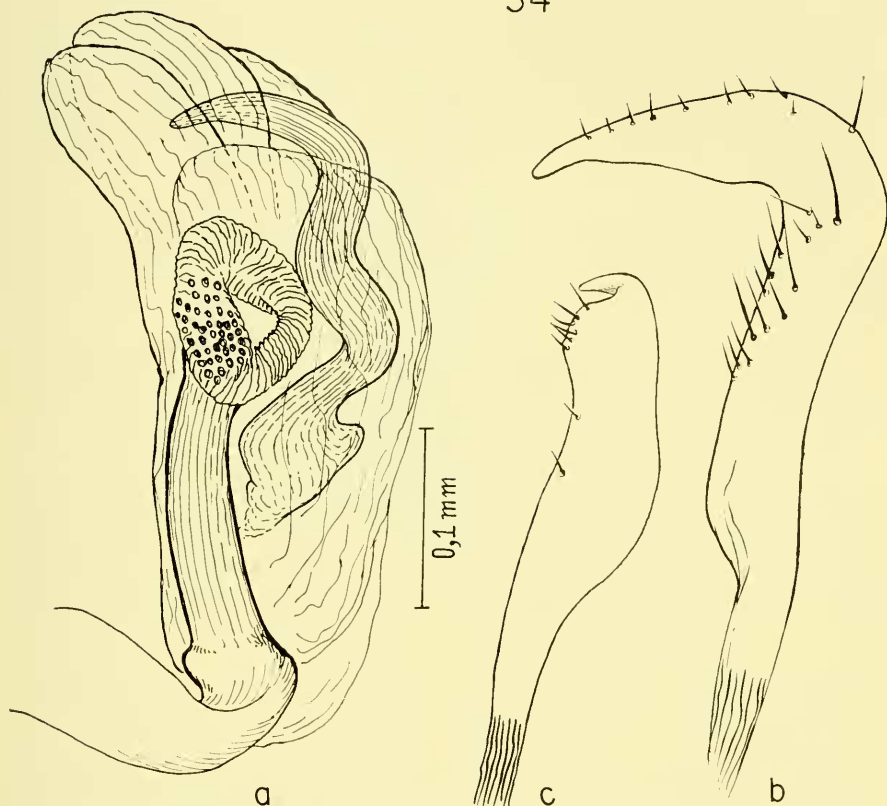
FIGURE 33. *Trigonotylus lineatus* (Butler). Male.

TRIBE MIRINI

Key to Genera

- | | |
|--|----------------------|
| 1. Vertex sulcate longitudinally, frons usually striolate | 2 |
| – Vertex not sulcate, frons always smooth | 3 |
| 2. Rostrum reaching beyond tip of abdomen; portion of head anterior to eye about as long as segment I of antenna | <i>Galapagomiris</i> |
| – Rostrum not reaching beyond middle of abdomen; portion of head anterior to eye about two times shorter than length of segment I of antenna | <i>Creontiades</i> |
| 3. Dorsal surface highly polished, glabrous (only a few hairs present on anterior margin of pronotum or margin of hemelytra) | <i>Horcias</i> |

34

FIGURE 34. *Trigonotylus lineatus* (Butler): a, Aedeagus; b, Left clasper; c, Right clasper.

- Dorsal surface dull, distinctly pubescent (if polished, then hairs present on corium and disc of pronotum) 4
- 4. Body clothed with silvery, silky or woolly pubescence mixed with fine erect hairs, sometimes easily rubbed off *Polymerus*
- Body clothed with a single type of pubescence, without woolly or silky hairs 5
- 5. Left clasper characteristic (fig. 46b) with two points and a central lobe; vesica without spiculum *Taylorilygus*
- Left clasper characteristic (fig. 48b) with a subapical lobe or teeth on dorsal curvature; vesica with spiculum *Dagbertus*

Genus *Galapagomiris* Carvalho, new genus

Species of middle size, elongate, body smooth, shagreen, scutellum rugose basally, body covered by recumbent pubescence, except on collar and scutellum where long and erect setae are to be seen.

Head long, semihorizontal, protruding in front of antennal bases, vertex

sulcate longitudinally, not carinate, eyes large, contiguous to pronotum, when seen from side, reaching gula below, clypeus flat, rostrum very long, reaching apex of hemelytra, beyond the tip of abdomen, segment I reaching middle of anterior coxae, segment II attaining apex of hind coxae. Antennae long, segment I slightly incrassate towards apex, with some erect setae, about as long as width of head, remaining segments cylindrical, with approximate same thickness, pubescence very short.

Pronotum narrowing markedly towards head, lateral margin straight, posterior margin very slightly emarginate at middle, calli obsolete, collar with long and erect setae. Mesoscutum exposed, scutellum rugose basally, with long and erect setae.

Hemelytra shagreen, cuneus slightly longer than wide at base, membrane biareolate. Legs long and slender, tibiae with numerous spines, tarsi with segments of approximately same length, claws and arolia of the Mirini type.

TYPE OF GENUS. *Galapagomiris longirostris*, new species.

This genus is characterized by the very long rostrum, by the noticeably erect pubescence of collar and scutellum, by the semihorizontal, strongly produced head with the sulcate vertex and by the smooth, shagreen body. It approaches *Megacoelum* Fieber, 1858, but differs from it by the produced head, by the long and erect pubescence on collar and scutellum and by its very long rostrum.

20. *Galapagomiris longirostris* Carvalho, new species.

(Figures 35, 36.)

Characterized by its color and dimensions.

MALE. Length 5.1 mm., width 1.5 mm. *Head*: Length 0.6 mm., width 1.0 mm., vertex 0.25 mm. *Antennae*: Segment I, length 0.7 mm., II, 1.8 mm.; III, 1.3 mm.; IV, 1.2 mm. *Pronotum*: Length 0.5 mm., width at base 1.3 mm. *Rostrum*: Length 5.0 mm.

General color brownish fuscous to cinnamon color; vertex and collar paler, the latter with a few darker spots at base of setae; pronotum with a narrow dark line before very narrow pale posterior margin; scutellum tipped with black, basal half of corium and embolium and apical portion of the latter paler; membrane fuscous; antennae with segments II and III paler towards the base; underside and legs concolorous with upper surface, tibiae I and II paler, tipped with fuscous.

Genitalia: Aedeagus (fig. 36a) with vesica as shown in figure. Left clasper (fig. 36b) and right clasper (fig. 36c) very similar to those of genus *Creontiades* Distant, as illustrated.

FEMALE. Unknown.

HOLOTYPE. Male. Galápagos Archipelago, SANTA CRUZ: Academy Bay, Darwin Research Station, I-26-1964 (Schuster).

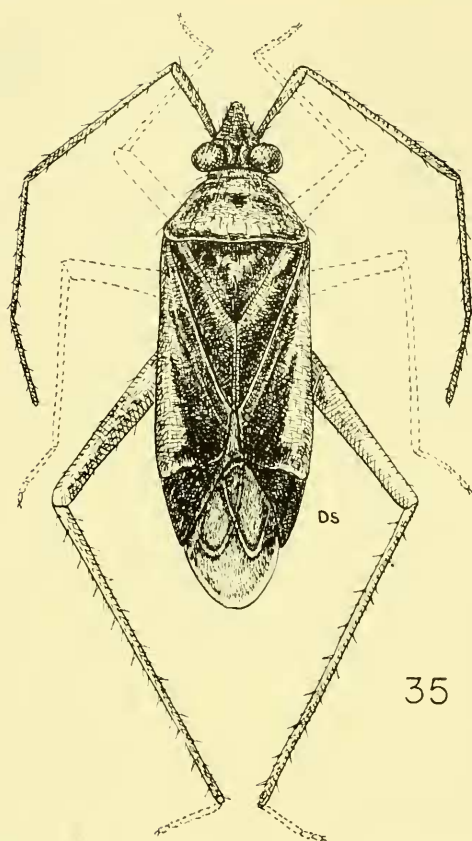


FIGURE 35. *Galapagomiris longirostris* Carvalho, new genus, new species. Holotype male.

Genus CREONTLADES Distant

Key to Galápagos Species

1. General color of body fuscous, castaneous, brown or black, with or without pale areas; scutellum totally black or brown 2
- General color of body straw, pale or citrine; scutellum pale or pale with dark spots 4
2. Hemelytra black or brown, with an irregular sub-basal whitish or pale area on corium and embolium; scutellum totally black *C. fuscus*
- Hemelytra unicolorously brown or castaneous, with traces of red; scutellum black or brown, with two subapical pale spots 3
3. Posterior femora with a milky-white sub-apical area; pronotum with numerous dark points; second antennal segment with two pale areas *C. fernandinus*
- Posterior femora unicolorous; dark points of pronotum, if present, few; second antennal segment unicolorous *C. castaneum*
4. Scutellum with at least the extreme apex dark 5
- Scutellum totally pale or citrine 6

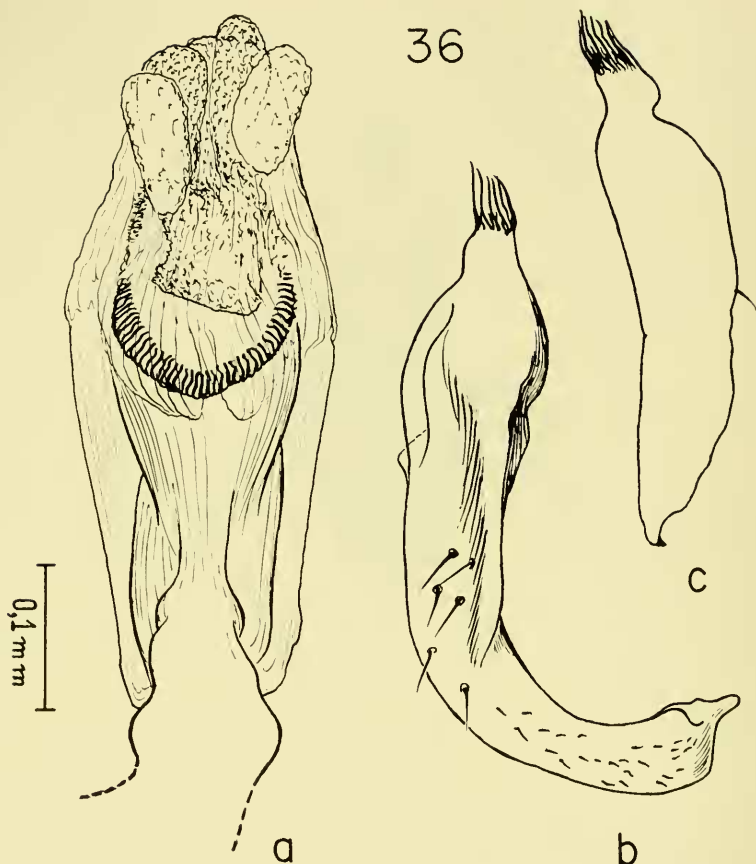


FIGURE 36. *Galapagomiris longirostris* Carvalho, new genus, new species: a, Aedeagus; b, Left clasper; c, Right clasper.

5. Head, pronotum and scutellum with a slender longitudinal vitta; body above without numerous dark points *C. vittatus*
- Head, pronotum and scutellum without longitudinal vitta; body above with numerous dark points *C. punctatus*
6. Color yellowish testaceous; hind margin of pronotum usually with a slender fuscous line; minute black dot on extreme base of hind tibia *C. willowesi*
- Color citrine; hind margin of pronotum unicolorous with disc; hind tibia without minute black dot on extreme base *C. citrinus*

21. *Creontiades castaneum* Van Duzee.

Creontiades castaneum VAN DUZEE, 1933, Proc. Calif. Acad. Sci., ser. 4, vol. 21, no. 4, p. 27.

Characterized by its color and dimensions.

MALE. Length 5.8 mm., width 2.1 mm. *Head*: Length 0.5 mm., width 1.1

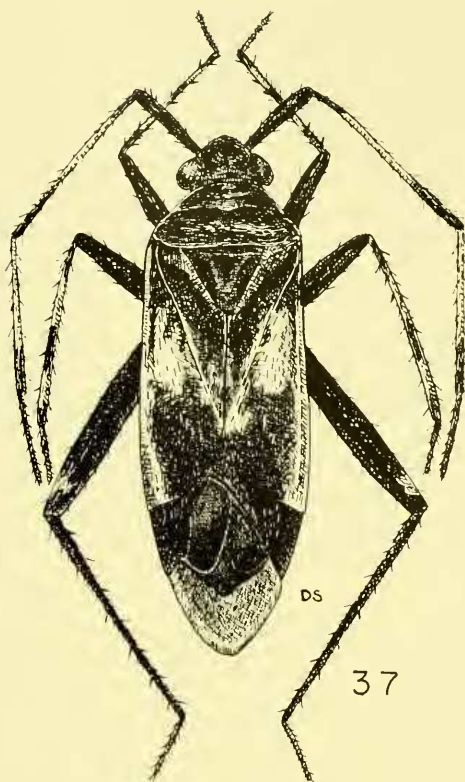


FIGURE 37. *Creontiades fuscus* Barber. Male.

mm., vertex 0.40 mm. *Antennae*: Segment I, length 0.8 mm.; II, 1.6 mm.; III, 1.3 mm.; IV, 0.8 mm. *Pronotum*: Length 0.7 mm., width at base 1.5 mm.

General color chestnut-brown with pronotum and scutellum almost piceous, antennae and legs varied with paler areas; pleura, base of abdomen and apical one-half of hind femora, basal two-thirds of antennal segment II and narrow base of III and IV, rostrum, apex of coxae, trochanters and base of femora, pale; tip of rostrum and of tarsal segment III and tibial spines black; hind tibiae brown, becoming pale at apex; hind margin of pronotum slenderly whitish and an obscure pale spot within basal angles of scutellum and another on either side of its apex; genital segment pale. Basal segment of antenna with a subapical black bristle on its inner surface, general pubescence pale; membrane fuscous.

Rostrum reaching apex of hind coxae.

Genitalia: Very similar to *fuscus* Barber.

FEMALE. Similar to male in color, more robust. Length 6.3 mm., width 2.0 mm.

DISTRIBUTION. Galápagos Archipelago: (Chatham, Floreana, Santa Cruz).

SPECIMENS STUDIED. FLOREANA: 1 ♂, 1 ♀, II-18-1964 (Usinger); 1 ♀, Wittmer Farm, II-15-1964 (Usinger).

ADDITIONAL SPECIMENS. FLOREANA: 5 ♀♀, II-18-1964 (Usinger); 1 ♀, Wittmer Farm, II-15-1964 (Usinger). SANTA CRUZ: 2 ♂♂, Table Mountain, 440 m., IV-16-1964 (Cavagnaro).

This species belongs to the group of *Creontiades* with dark coloration, hemelytra without pale areas, and scutellum with two pale subapical spots. It differs from *C. fernandinus*, new species by the lack of milky-white pale subapical areas on hind femora and pronotum without numerous dark points.

22. *Creontiades citrinus* Carvalho, new species.

Characterized by its color and dimensions.

FEMALE. Length 5.5 mm., width 2.1 mm. *Head*: Length 0.2 mm., width 1.0 mm., vertex 0.42 mm. *Antennae*: Segment I, length 0.8 mm.; II, 2.1 mm.; III, 1.9 mm.; IV, 1.1 mm. *Pronotum*: Length 0.6 mm., width at base 1.8 mm.

General color pale yellowish to lemon yellowish; eyes reddish brown; membrane pale fuscous. Pubescence short and golden brilliant in color.

Rostrum reaching 4th abdominal segment.

MALE. Unknown.

HOST PLANT. *Heliotropium curassavicum*.

HOLOTYPE. Female, Galápagos Archipelago, Tortuga Bay, SANTA CRUZ: II-10-1964, *Heliotropium curassavicum* (Kuschel).

PARATYPE. One female, same data as type.

ADDITIONAL SPECIMEN. 1 ♀, same data as type.

This species has the general fascies of *C. willowesi* but differs by the color of the pronotum, which is totally citrine; by the lack of a black spot on the base of hind coxae and by the smaller size.

23. *Creontiades fernandinus* Carvalho, new species.

(Figure 38.)

Characterized by its color, dimensions and structure of male genitalia.

MALE. Length 6.1 mm., width 2.1 mm. *Head*: Length 0.4 mm., width 1.1 mm., vertex 0.31 mm. *Antennae*: Segment I, length 0.8 mm.; II, 1.9 mm.; III, 1.6 mm.; IV, 1.1 mm. *Pronotum*: Length 0.7 mm., width at base 1.8 mm.

General color brown to castaneous with pale and dark areas; pronotum with dark punctations, with fuscous areas over calli and posteriorly opposite mesoscutum, lateral margin, posterior angle and extreme posterior margin, paler, the latter tending to milky-white; mesoscutum brown sometimes with paler area on each side; scutellum dark brown or brown, with piceous apex and sometimes two pale spots subapically; clavus and corium dark brown to fuscous, with areas formed by dots or small spots, paler or darker; embolium and exocorium pale, the first tending to reddish in one specimen; cuneus brown with a reddish tinge; membrane fuscous, nervures reddish towards apex; head with brown and pale

areas, an obsolete reddish brown to brown area on internal margin of eye; clypeus, lorum and gena with small reddish dots; rostrum pale tipped with fuscous; mesosternum and pleural area brown; ostiolar peritreme yellowish with reddish tinge around orifice; coxae brown at bases, yellowish towards apices, trochanters pale, femora pale at base, infusate towards apices, sprinkled with reddish dots, the last pair with yellowish subapical annulation, tibiae pale, sprinkled with brown and reddish dots, with a ring or area darker on apical third, tarsi light with extreme apices fuscous; abdomen with reddish brown to brown and pale areas, a longitudinal subdorsal lateral line formed by well marked yellow spots, genital segment tending to reddish towards apex; antennal segment I brown, sprinkled with reddish, segment II fuscous brown with a paler subbasal area and another faintly light area beyond middle, segments III and IV fuscous to brown. Pubescence of body golden to yellow.

Rostrum reaching the third abdominal segment.

Genitalia: Aedeagus (fig. 38a) of the generic type, vesical lobes and area near secondary gonopore provided with numerous spines. Left clasper (fig. 38b) falciform, with short setae, as illustrated. Right clasper (fig. 38c) with a more sclerotized area apically.

FEMALE. (See below.)

HOLOTYPE. Male. Galápagos Archipelago, FERNANDINA: Punta Espinosa, II-27, 28-1964 (Usinger).

PARATYPE. One male, same data as type.

The female has been discovered in additional material and is described below by Gagné:

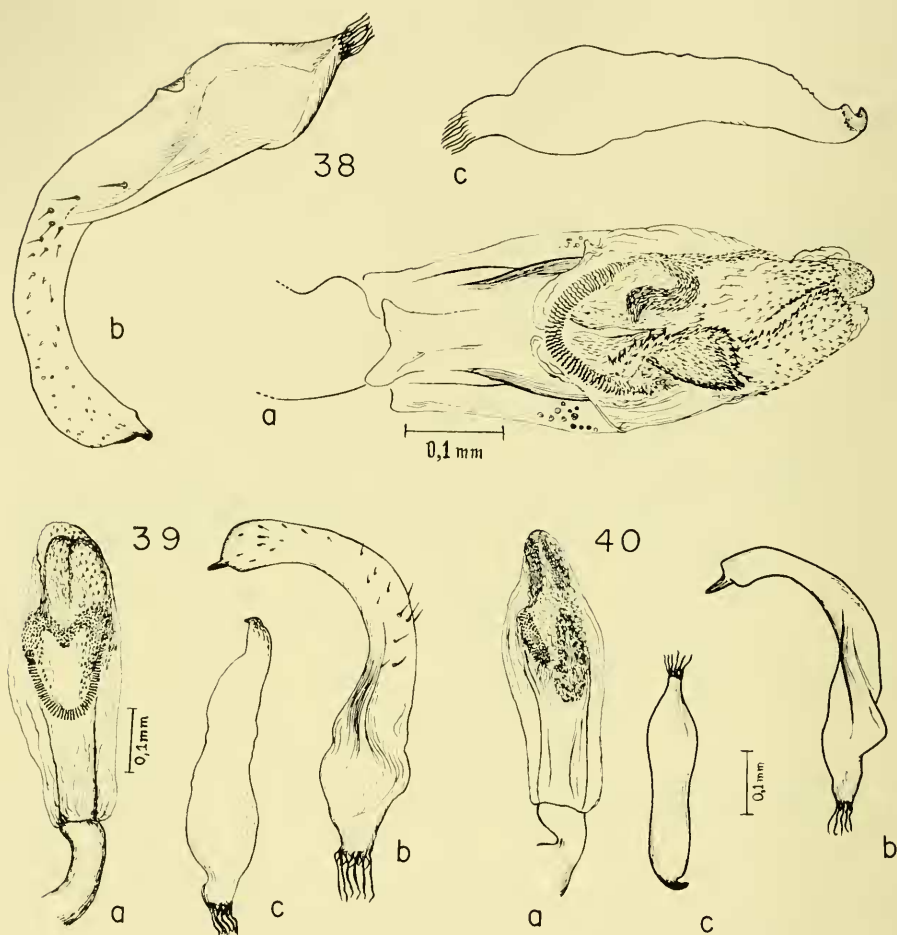
FEMALE. Differing from male as follows: Length 5.95 mm. (5.26 to 5.95 mm.); width 2.10 mm. (1.87 to 2.10 mm.). *Head*: Length 0.83 mm. (0.73 to 0.83 mm.); width 1.10 mm. (1.03 to 1.10 mm.); vertex width 0.41 mm. (0.38 to 0.41 mm.). *Antennae*: I, 0.91 mm. (0.88 to 0.91 mm.); II, 2.07 mm.; III, 1.67 mm.; yellow with a sub-basal reddish annulation; IV, broken. *Pronotum*: Length 1.10 mm. (0.97 to 1.10 mm.); width 1.77 mm. (1.70 to 1.77 mm.); calli reddish, disc brown-marmorate, pale area on posterior angle more extensive. Scutellum with paler areas more extensive. Exocorium and base of endocorium pale, its distus and clavus brown-marmorate. *Rostrum*: Length 2.68 mm.; reaching posterior of hind coxae; brownish with a darker tip. *Legs*: Fore and hind coxae totally brown; hind femur with subapical annulation wider.

NEALLOTYPE. Female. Galápagos Archipelago, Fernandina Island, Punta Espinosa, I-29-1964 (Usinger).

ADDITIONAL SPECIMEN. 1 ♀, same data as neallotype.

In a darker female the junior author finds that the basal edge of the pronotum is dark, the endocorium is totally dark brown, and the femur is almost totally dark brown.

This species differs from others of the genus in the Galápagos by its peculiar



FIGURES 38-40. *Creontiades* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 38, *C. fernandinus* Carvalho, new species; figure 39, *C. fuscus* Barber; figure 40, *C. willowsi* Van Duzee.

color and by the structure of the male genitalia. It is closer in general appearance to *C. castaneum* Van Duzee, but differs from it by the coloration of pronotum and by the presence of a white subapical area near apex of hind femora.

24. *Creontiades fuscus* Barber.

(Figures 37, 39.)

Creontiades fuscus BARBER, 1927, Zoologica, vol. 5, no. 21, p. 248.

Creontiades fuscus VAN DUZEE, 1937, Proc. Calif. Acad. Sci., ser. 4, vol. 22, p. 115.

Characterized by its color and dimensions.

MALE. Length 5.0 mm., width 1.7 mm. *Head*: Length 0.3 mm., width 1.1 mm., vertex 0.27 mm. *Antennae*: Segment I, length 0.8 mm.; II, 2.3 mm.; III, 1.7 mm.; IV, 0.8 mm. *Pronotum*: Length 0.5 mm., width at base 1.6 mm.

General color dark-brown or fuscous with yellowish testaceous or pale areas; head, pronotum, scutellum, hemelytra anteriorly and posteriorly, segment I of antenna, narrow base and apical third of II segment, segment I of rostrum, most of sternum and venter, femora and posterior tibiae, dark-brown or fuscous; posterior half of clavus and broad transverse area posteriorly extended along costal margin of hemelytra pale or yellowish testaceous. Head shading to brown on vertex, last two antennal segments smoky-brown with base of segment III paler, rostrum sordid stramineous, pronotum shading into paler brown on disc, membrane dark smoky-brown; coxae, trochanters, ostiolar peritreme and outer margins of metapleura stramineous; anterior and intermediate tibiae pale stramineous with a faint prebasal, premedian and apical band, brown; tarsal segments tipped with brown.

Rostrum reaching the hind coxae.

Genitalia: Aedeagus (fig. 39a) of the generic type, vesica with spiny lobes and spinose areas near secondary gonopore. Left clasper (fig. 39b) acutely pointed apically. Right clasper (fig. 39c) simple, as illustrated.

FEMALE. Similar to male in color, more robust. Length 6.0 mm., width 2.1 mm.

DISTRIBUTION. Galápagos Archipelago (Rábida, Santa Cruz, Isabela, Pinzón, Fernandina islands).

SPECIMENS STUDIED. RÁBIDA: V-6-1932 (Willows) Templeton Crocker Expedition, 1932, 2 ♂♂, 2 ♀♀; SANTA CRUZ: III-16-1935, Conway Bay, presented by Templeton Crocker Expedition, 2 ♂♂, 2 ♀♀; Academy Bay, Darwin Research Station (Schuster), II-4-18-1964 and I-26-30-1964, 6 ♂♂, 1 ♀; same locality (Cavagnaro & Schuster), II-13-1964, 3 ♂♂; Academy Bay, II-22-1964, at light (Ashlock), 2 ♂♂, 1 ♀; ISABELA: Tagus Cove, I-30-1964 on *Scalesia gummifera* (Usinger), 2 ♂♂, 1 ♀; PINZÓN: summit and upper Calera area, II-7-1964 (Cavagnaro), 1 ♂; FERNANDINA: S.W. side, 1000 feet, II-5-1964 (Ashlock), 2 ♂♂, 1 ♀.

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♂ (allotype), 1 ♀ (holotype), Seymour Bay, IV-22-1923, Williams Galápagos Expedition, Department of Tropical Research, New York Zoological Society, William Beebe, Director (types in American Museum, Natural History); 1 ♂, Darwin Research Station, Academy Bay, II-27-1964 (Cavagnaro & Schuster). ISABELA: 1 ♂, 2 ♀♀, Tagus Cove, I-30-1964. *Ex Scalesia gummifera* (Usinger). RÁBIDA: 2 ♂♂, VI-6-1932 (Willows), Templeton Crocker Expedition, 1932.

This species is very characteristic and differs from other black, brown or castaneous species by the irregular white or pale area on hemelytra, as well as the totally black scutellum.

25. *Creontiades punctatus* Carvalho, new species.

Characterized by the light color of body, and by the scutellum being pale with numerous dark points.

MALE. Length 6 mm., width 2.0 mm. *Head*: Length 0.5 mm., width 1.1 mm.; vertex 0.35 mm. *Antennae*: Segment I, length 0.8 mm.; II, 1.8 mm.; III, 1.8 mm.; IV, broken. *Pronotum*: Length 0.8 mm., width at base 1.8 mm.

General color straw yellow to yellowish testaceous; upper portion of body with dark points; a subbasal slender line on pronotum and apex of scutellum dark brownish to black; mesosternum fuscous to brown, coxae and base of femora, pale; apical portion of femora with dark spots; tibiae and tarsi pale with dark spines; claws black. First antennal segment with small fuscous dots, remaining segments pale.

Rostrum reaching the 4th abdominal segment.

Genitalia: Very similar to *C. vittatus*, new species.

FEMALE. Similar to male in color and size.

HOLOTYPE. Male. Galápagos Archipelago, SANTA CRUZ: Academy Bay, Darwin Research Station, II-8-1964 (Schuster).

ALLOTYPE. Female. Same data as type, II-7-1964 (Schuster).

PARATYPES. One female, same data as allotype; 1 ♀, Tortuga Bay, II-10-1964 (Usinger); FERNANDINA: 1 ♀, S.W. side, 1000 feet, II-4-1964 (Ashlock).

This species differs from *C. vittatus*, new species and others from the Galápagos by the typical coloration. The body is beset with numerous brown dots.

26. *Creontiades vittatus* Carvalho, new species.

Characterized by its color and dimensions.

MALE. Length 5.2 mm., width 1.5 mm. *Head*: Length 0.3 mm., width 0.9 mm., vertex 0.37 mm. *Antennae*: Segment I, length 1.0 mm.; II, 2.3 mm.; III, 1.7 mm.; IV, 0.8 mm. *Pronotum*: Length 0.5 mm., width at base 1.6 mm.

General color pale yellow to stramineous with brownish or fuscous dots; head with a slender median vitta and minute reddish dots, eyes reddish-brown; pronotum with a slender median longitudinal and two lateral obsolete reddish fasciae, a few reddish brown dots, especially along posterior area and two small fuscous spots on disc; propleura with a distinct reddish longitudinal vitta running posteriorly to middle; scutellum with a very slender longitudinal vitta following that of pronotum, reddish, tipped with fuscous; hemelytra with middle portion of corium showing a few fuscous minute spots, some of them fused to form a small fuscous area; underside concolorous with body above, rostrum and tarsi tipped with fuscous.

Rostrum reaching the 6th or 7th abdominal segment. Posterior legs mutilated.

Genitalia: Similar to *C. punctatus* new species.

FEMALE. Similar to male in color and dimensions.

HOLOTYPE. Male. Galápagos Archipelago, Academy Bay, SANTA CRUZ: II-15-1964, light trap (Ashlock).

ALLOTYPE. Female, same data as holotype, I-26-1964.

PARATYPES. 1 ♀, same data as holotype; 1 ♀, Academy Bay, Darwin Research Station, I-24-1964 (Cavagnaro & Schuster); 1 ♂, Academy Bay, I-23-1964 (Usinger).

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♂, Darwin Research Station, Academy Bay, I-20-1964, at light (Cavagnaro & Schuster); 1 ♂, same data, II-12-1964. FERNANDINA: 1 ♂, W. side, 1100 feet, II-5-1964 (Cavagnaro).

This species approaches in general appearance *Creontiades tellinii* Reuter and *C. pallidus* (Rambur), but differs from both by its color and dimensions.

27. *Creontiades willowsi* Van Duzee.

(Figure 40.)

Creontiades willowsi VAN DUZEE, 1933, Proc. Calif. Acad. Sci., ser. 4, vol. 21, no. 4, p. 28; 1937, Proc. Calif. Acad. Sci., ser. 4, vol. 22, p. 115.

Characterized by its color and dimensions.

MALE. Length 6.2 mm., width 2.0 mm. *Head*: Length 0.5 mm., width 1.1 mm., vertex 0.27 mm. *Antennae*: Segment I, length 1.0 mm.; II, 2.4 mm.; III, 2.0 mm.; IV, 1.0 mm. *Pronotum*: Length 0.8 mm., width at base 1.8 mm.

General color yellowish testaceous; hind margin of pronotum usually with a slender fuscous line; tips of tarsi and rostrum and a minute dot on extreme base of hind tibiae and eyes, black; apex of hind femora very slightly darker; membrane distinctly enfumed.

Rostrum reaching fourth abdominal segment.

Genitalia: Aedeagus (fig. 40a) of the generic type, vesica with small spines on lobes and on area near secondary gonopore. Left clasper (fig. 40b) and right clasper (fig. 40c) as illustrated.

FEMALE. Similar to male in color, more robust. Length 6.7 mm., width 2.1 mm.

DISTRIBUTION. Galápagos Archipelago (Santiago, Rábida, Santa Cruz).

SPECIMENS STUDIED. RÁBIDA: VI-6-1932, Templeton Crocker Expedition (Willows), 2 ♂♂, 2 ♀♀; SANTA CRUZ: Galápagos, VI-13-1932, Templeton Crocker Expedition, Sullivan Bay (Willows), 2 ♂♂.

ADDITIONAL SPECIMENS. RÁBIDA: 2 ♂♂, 11 ♀♀, same data as above. SANTA CRUZ: 1 ♂, same data as above; 1 ♀, Academy Bay, III-24-1935 (Crocker).

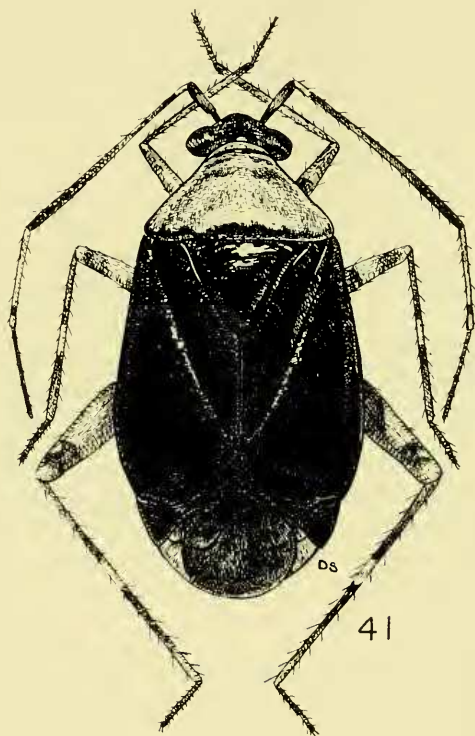
This species differs from *C. citrinus* new species by the coloration of the posterior margin of the pronotum and also by the minute black spot on the extreme bases of the hind coxae.

Genus *Horcias* Distant28. *Horcias chiriquinus* Distant.

(Figures 41, 42.)

Horcias chiriquinus DISTANT, 1884, Biol. Cent.-Amer. Rhynch., vol. 1, p. 278.

Characterized by its color and by the structure of male genitalia.

FIGURE 41. *Horcias chiriquinus* Distant. Female.

MALE. Length 6.2 mm., width 2.3 mm. *Head*: Length 0.3 mm., width 1.1 mm., vertex 0.46 mm. *Antennae*: Segment I, length 0.7 mm.; II, 1.7 mm.; III, 1.2 mm.; IV, 1.3 mm. *Pronotum*: Length 1.0 mm., width at base 2.0 mm.

General color brilliant bluish-black, with head, pronotum, scutellum and legs, luteous to red; clypeus, lorum, gena, middle of frons and posterior area of vertex fuscous to black (in some specimens the head is almost totally black); pronotum reddish lutescent, posterior margin opposite scutellum in fully mature specimens darkened; scutellum lutescent to red (sometimes bluish-black in fully mature specimens); hemelytra brilliant bluish-black, cuneus lighter, sometimes tending to reddish; membrane fuscous, nervures black; sternal and pleural areas, legs,

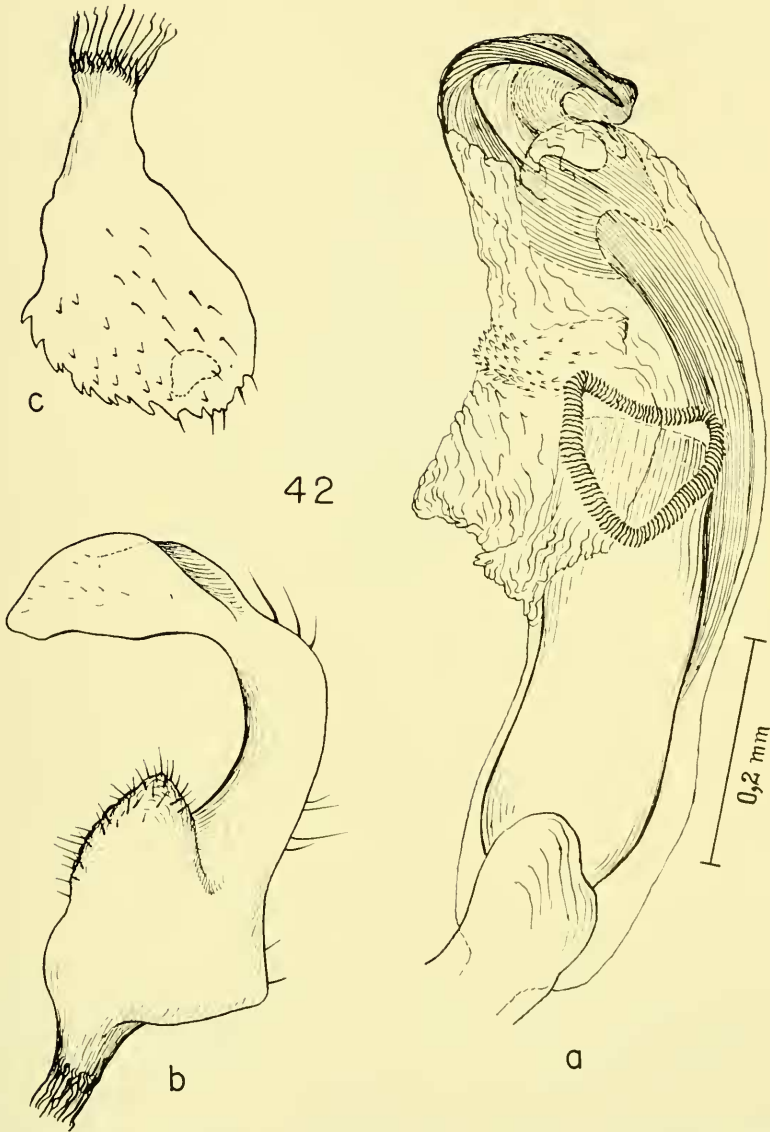


FIGURE 42. *Horcias chiriquinus* Distant: a, Aedeagus; b, Left clasper; c, Right clasper.

lutescent; posterior femora infuscated apically with a subapical milky-white spot on dorsal side; median and posterior tibiae infuscated, middle pair with a submedian whitish annulation, hind pair with a median and a subapical annulation; tarsi tipped with fuscous; abdomen fuscous-lutescent to bluish or black,

with three longitudinal milky-white fasciae on dorsolateral portion, the inferior one marked only posteriorly; antennae fuscous to black, segment I and II with extreme base and a subbasal area pale, segment III white with only extreme apex black, segment IV black with extreme base whitish.

There is a tendency in coloration from general lutescent or reddish in teneral or young specimens to brilliant bluish-black in fully mature ones, in both sexes. The head and scutellum usually are seen with this gradation of color.

Rostrum reaching middle coxae.

Genitalia: Aedeagus (fig. 42a) with typical apical spiculum and a field of spines near secondary gonopore. Left clasper (fig. 42b) with apex of hook and basal lobe swollen. Right clasper (fig. 42c) short and blunt, as seen in figure.

FEMALE. Similar to male in color, noticeably more robust.

DISTRIBUTION. Mexico, Central America (Panama), and South America (Bolivia), Galápagos Archipelago (Santa Cruz).

SPECIMENS STUDIED. SANTA CRUZ: Horneman Farm, 220 m., IV-2-1964 (Cavagnaro), 6 ♂♂, 13 ♀♀, same locality and collector, III-5-1964; 2 ♂♂, 2 ♀♀, Bella Vista, 220 m., I-28-1964 (Kuschel); 10 ♂♂, 16 ♀♀, Bella Vista, 6 miles N. of Academy Bay, II-13-1964 (Ashlock).

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♂, 4 ♀♀, Bella Vista, 220 m., II-4-1964 (no collector); 2 ♂♂, same locality, I-23-1964 (Kuschel); 1 ♂, 1 ♀, same locality, I-28-1964; 6 ♀♀, Bella Vista, II-26-1964 (Usinger); 1 ♂, Horneman Farm, 220 m., II-19-1964 (Cavagnaro); 1 ♂, same data, III-25-1964; 1 ♀, same locality, IV-5-1964.

This species is undoubtedly a recent introduction in the Galápagos Archipelago. The authors have seen all collections taken previously on the Islands and this is the first report of its presence in Santa Cruz.

Genus *Polymerus* Hahn

29. *Polymerus nigrutilus* (Walker).

(Figures 43, 44.)

Capsus nigrutilus WALKER, 1873, Cat. Het., vol. 6, p. 112.

Poeciloscytus vegatus VAN DUZEE, 1933, Proc. Calif. Acad. Sci., ser. 4, vol. 21, no. 4, p. 28, new synonymy.

Polymerus nigrutilus CARVALHO, 1959, Cat. Miridae World, vol. 4, p. 238.

Characterized by its color and male genitalia.

MALE. Length 2.6 mm., width 1.0 mm. *Head:* Length 0.4 mm., width 0.6 mm., vertex 0.30 mm. *Antennae:* Segment I, length 0.3 mm.; II, 1.0 mm.; III, 0.6 mm.; IV, 0.6 mm. *Pronotum:* Length 0.5 mm., width at base 0.9 mm.

General color dark brown to fuscous-testaceous or black, head, pronotum and scutellum piceous; two spots on vertex bordering eyes, base of antenna segment II, yellowish to pale; apex of scutellum pale to reddish; embolium, basal portions of corium and clavus, posterior margin of pronotum narrowly, corial commissure,

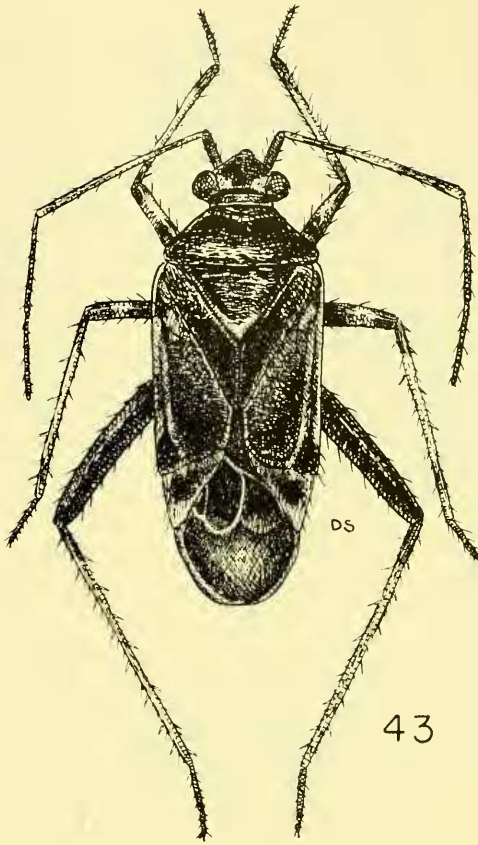


FIGURE 43. *Polymerus nigrutilus* (Walker). Male.

nervures of membrane, internal and apical angles of cuneus, yellowish to pale; lunule of cuneus brown to reddish; hemelytra dark brown, apical portion of embolium and apical external angle of corium, darker; membrane infuscated; lorum, buccula and segment I of rostrum pale with reddish tinge on some specimens; eyes brown to dark; rostral segments II, III and IV, margin of propleura narrowly, ostiolar peritreme, trochanters, tibiae, tarsal segments I and II, a lateral spot on 7th abdominal segment, pale to yellowish; apices of tarsi, extreme bases of tibiae and apex of rostrum, dark; femora I and II with a yellowish subapical ring. Pubescence silvery.

Rostrum reaching the 8th abdominal segment.

Genitalia: Aedeagus (fig. 44a) as shown in figure, with a strong basal plate. Left clasper (fig. 44b) falciform with pointed apex. Right clasper (fig. 44c) small with blunt apex.

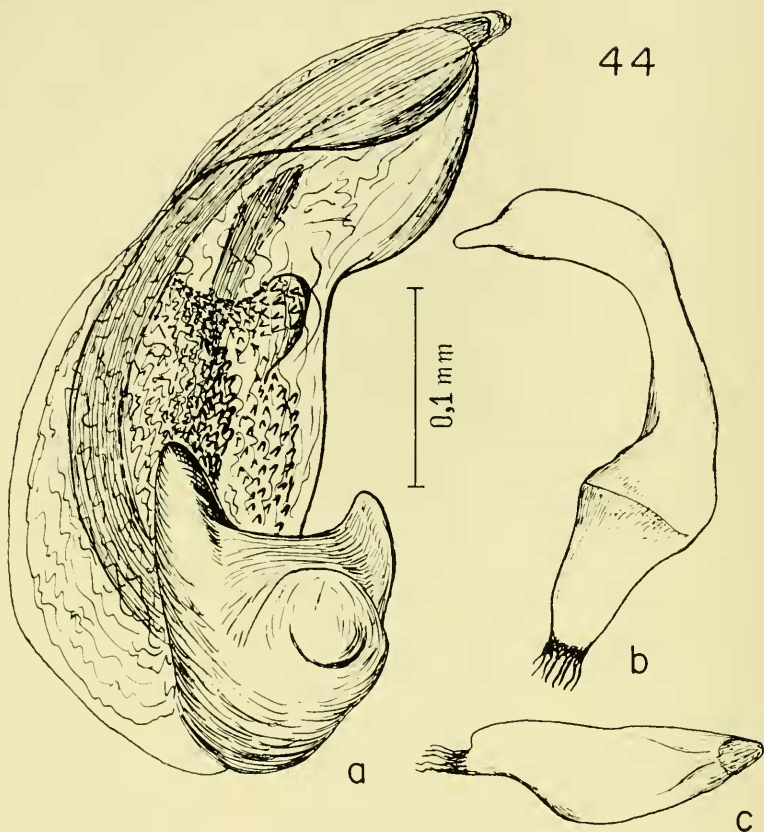


FIGURE 44. *Polymerus nigrutilus* (Walker): a, Aedeagus; b, Left clasper; c, Right clasper.

FEMALE. Similar to male, more robust. Length 3.1 mm., width 1.2 mm.

DISTRIBUTION. Galápagos Archipelago (Floreana, Santa Cruz, Isabela).

SPECIMENS STUDIED. SANTA CRUZ: 2 ♂♂, 2 ♀♀, Bella Vista, IV-2-1964 (Usinger); 5 ♂♂, 4 ♀♀, Table Mountain, 440 m., IV-16-1964 (Cavagnaro); 8 ♂♂, 9 ♀♀, abandoned garden, 5 miles N. Academy Bay, I-24-1964 (Ashlock); 6 ♂♂, 3 ♀♀, 1.5 miles N. Academy Bay (Ashlock); 2 ♂♂, 1 ♀, 6 miles N., under *Portulaca*, under *Jaegeria hirta* Lessing (Ashlock).

ADDITIONAL SPECIMENS. SANTA CRUZ: 2 ♂♂, 6 ♀♀, Bella Vista, II-4-1964 (Usinger); 1 ♂, Horneman Farm, 220 m., III-5-1964 (Cavagnaro).

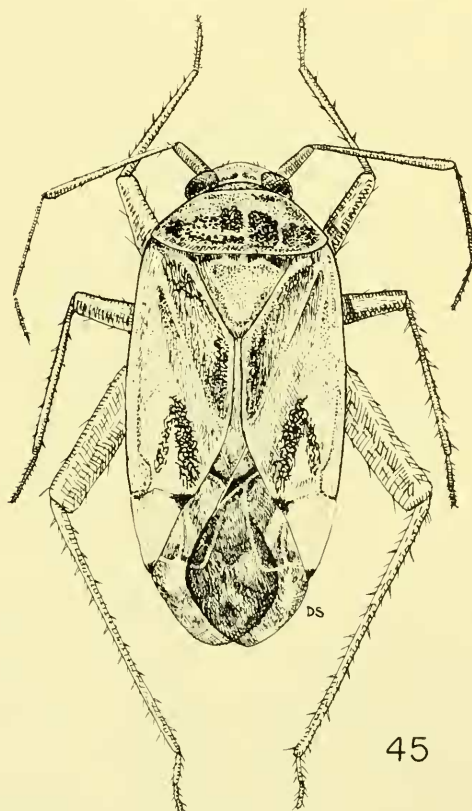
This species is close to *Polymerus testaceipes* (Stål), but differs in color and dimensions. Carvalho has seen the type of *Capsus nigrutilus* Walker, in the British Museum of Natural History, thought to be lost by previous authors. Van Duzee's *Pocilloscytus vegatus* is a synonym of Walker's *C. nigrutilus*.

Genus *Taylorilygus* Leston30. *Taylorilygus pallidulus* (Blanchard).

(Figures 45, 46.)

Phytocoris pallidulus BLANCHARD, 1852, in Gay Hist. Fis. Pol. Chile, vol. 7, p. 183.*Lygus apicalis* FIEBER, 1861, Eur. Hem., p. 275.*Lygus putoni* MEYER, 1870, Schweiz. Ent. Ges., Mitt., p. 207.*Lygus prasinus* REUTER, 1876, Öfv. K. Vet.-Akad., Förh., vol. 32, no. 9, p. 72.*Lygus carolinae* REUTER, 1876, Öfv. K. Vet.-Akad., Förh., vol. 32, no. 9, p. 72.*Lygus uruguayensis* BERG, 1879, An. Soc. Ci. Arg., vol. 16, p. 16.*Lygus godmani* DISTANT, 1893, Bio. Cent. Amer. Rhynch., vol. 1, p. 433.*Lygus osiris* KIRKALDY, 1902, Trans. Ent. Soc. London, p. 262.*Lygus immitis* DISTANT, 1904, Fauna Brit. India, Rhynch., vol. 2, p. 456.*Lygus pubens* DISTANT, 1904, Fauna Brit. India, Rhynch., vol. 2, p. 456.*Lygus pallidulus*, CARVALHO, 1956, Ins. Micronesia Het. Miridae, vol. 7, no. 1, p. 89.

Characterized by its pale to greenish color and the structure of the male genitalia.



45

FIGURE 45. *Taylorilygus pallidulus* (Blanchard). Female.

MALE. Length 4.0 mm., width 1.7 mm. *Head*: Length 0.2 mm., width 1.1 mm., vertex 0.27 mm. *Antennae*: Segment I, length 0.4 mm.; II, 1.5 mm.; III, 0.8 mm.; IV, 0.5 mm. *Pronotum*: Length 0.7 mm., width at base 1.5 mm.

General color greenish or yellowish green; membrane and corium often marked with fuscous, apex of cuneus black; eyes dark brown, apices of tarsi and apex of rostrum fuscous to black.

Rostrum reaching the middle of abdomen.

Genitalia: Aedeagus (fig. 46a) without a visible spiculum, the lobes, at least two of them, with minute sclerotized teeth. Left clasper (fig. 46b) very typical, as seen in figure. Right clasper (fig. 46c) small, with pointed apex.

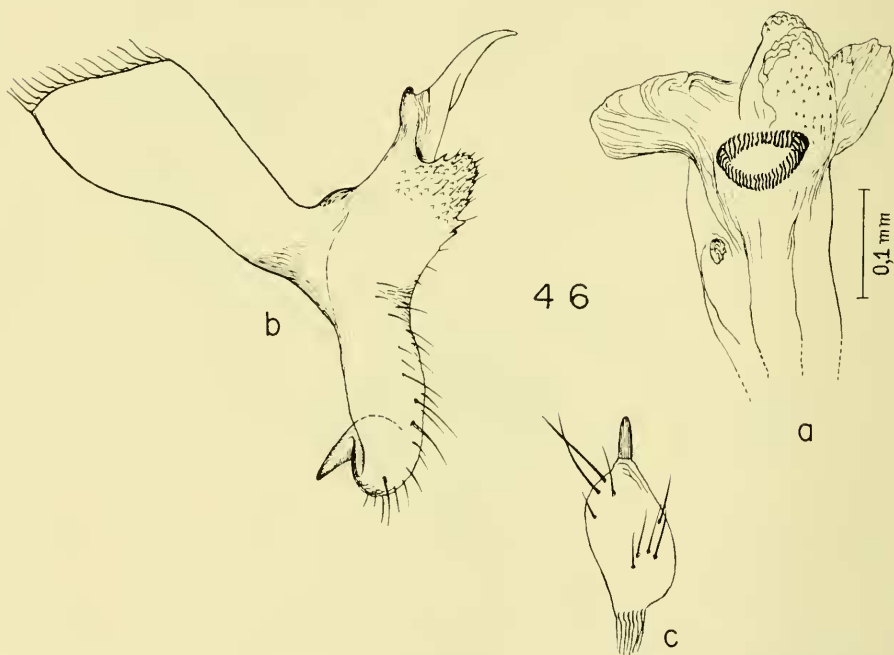


FIGURE 46. *Taylorilygus pallidulus* (Blanchard): a, Aedeagus; b, Left clasper; c, Right clasper.

FEMALE. Similar to male in color and dimensions, slightly more robust.

DISTRIBUTION. Cosmopolitan.

SPECIMENS STUDIED. SANTA CRUZ: 3 ♂♂, 1 ♀, Bella Vista, IX-26-1964 (Usinger); 4 ♂♂, 6 ♀♀, Bella Vista, 6 miles N. Academy Bay, II-21-1964 (Ashlock); 1 ♂, 1 ♀, *Miconia* belt, 1300 feet, (Ashlock); 1 ♀, Grassland, 2100 feet; SAN CRISTÓBAL: 1 ♀, Progreso, II-23-1964 (Usinger).

ADDITIONAL SPECIMENS. SANTA CRUZ: 2 ♂♂, Bella Vista, 220 m., II-4-1964 (Usinger); 1 ♂, Grassland, 750 m., V-5-1964 (Cavagnaro).

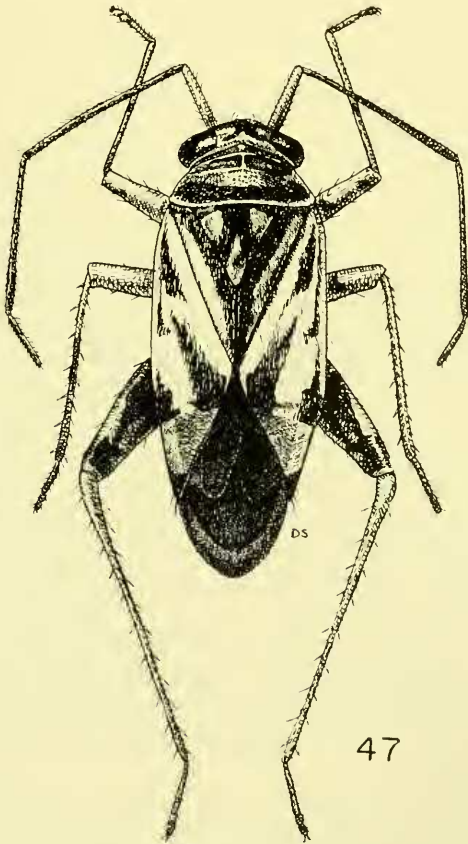
The ten different names which this species has been called so far are a demonstration of its wide range. The structure of the left clasper is very characteristic for the species and permits a clear separation from others in this genus.

Genus DAGBERTUS Distant

Key to Galápagos Species

(Revised by Gagné to include new species)

- 1. Hemelytra with a basal and an apical transverse reddish to reddish-brown fascia; first antennal segment reddish-brown, second segment pale with 2 reddish rings *D. formosus*
– Hemelytra and antennae otherwise colored 2
- 2. Hemelytra whitish marmorate or provided with numerous brown spots; second antennal segment infusate only on extreme apex *D. marmoratus*
– Hemelytra if pale, never marmorate or provided with numerous brown spots; second antennal segment pale only at extreme base or totally pale 3
- 3. Pronotum with 4–6 longitudinal brown or reddish stripes 4



47

FIGURE 47. *Dagbertus quadrinotatus* (Walker). Male.

- Pronotum entirely pale, or with a fuscous transverse band posteriorly 5
- 4. Pronotum with 6 longitudinal brown stripes *D. darwini*
- Pronotum with 4 longitudinal reddish stripes and a median X-shaped marking *D. figuratus*
- 5. Pronotum entirely pale or sordid yellow; hemelytra mostly pale or sordid yellow, without basal contrasting markings; rostrum of male not reaching genital segment 6
- Pronotum at least with a basal transverse brown band; hemelytra with basal contrasting markings; rostrum of male reaching middle of genital segment 7
- 6. Body entirely sordid yellow, lateral reddish markings absent *D. spoliatus*
- Body pale yellow with lateral reddish markings *D. pallidus*
- 7. Pronotum mostly brown with a narrow yellow transverse median area; head almost entirely brownish-black *D. nigrifrons*
- Pronotum, at most, with a transverse brown band on the basal quarter; tylus and median of vertex at the most, brown 8
- 8. Pronotum with the basal transverse fuscous band faint; head mostly pale with lateral reddish markings; brown markings on the clavus confined to the edge, the claval suture and the commissure *D. lineatus*
- Pronotum with basal transverse fuscous band dark; head with tylus and middle of vertex, brown; markings on clavus broad *D. quadrinotatus*

31. *Dagbertus darwini* (Butler).

(Figure 48.)

Capsus darwini BUTLER, 1877, Proc. Zool. Soc. London, p. 89.

Dagbertus darwini DISTANT, 1904, Ann. Mag. Nat. Hist., vol. 13, p. 203.

Characterized by its color and structure of male genitalia.

MALE. Length 4.0 mm., width 1.2 mm. *Head*: Length 0.2 mm., width 0.8 mm., vertex 0.37 mm. *Antennae*: Segment I, length 0.5 mm.; II, 1.6 mm.; III, 1.0 mm.; IV, broken. *Pronotum*: Length 0.5 mm., width at base 1.2 mm.

GENERAL COLOR. According to Dr. W. E. China, who examined the type (female) in the British Museum of Natural History, the general color is "pale sordid straw (green in life?). Hemelytra transparent so that metapleura and abdomen show through. Eyes black. . . . Dark brown markings: -Labrum, base of tylus, short line from apex of eye to base of clypeus, another from insertion of antenna to base of clypeus, a median longitudinal line on vertex; six longitudinal lines on pronotum, one along each lateral margin and four down disc; two broader stripes down scutellum; claval suture and embolial suture narrowly and a broader sinuate line from base of hemelytron to middle of apical margin of corium; a spot at apex of embolium and another at apex of cuneus; two parallel lines down metapleuron, the inner one broader than the other; a broad brown stripe from insertion of hemelytron to insertion of middle coxa; a broad brown stripe down side of venter away from lateral margin; apices of antennae, tibiae and tarsi brown."

On the six specimens studied we found the same color. The corium has a sinuate fascia rather than a line, the claval commissure and scutellar margin of clavus are broadly dark brown; membrane with a pale spot beyond apex of

cuneus; anterior and median femora with two subapical transverse bands below; posterior femora with three distinct cross bands, their tibiae with a subbasal dark spot.

Rostrum reaching the posterior coxae.

Genitalia: Aedeagus (fig. 48a) with vesica provided with a typical spiculum. Left clasper (fig. 48b) and right clasper (fig. 48c) as shown in figures.

FEMALE. Similar to male in color, slightly more robust.

HOST PLANT. *Scalesia* species.

DISTRIBUTION. Galápagos Archipelago (Floreana, Pinzón).

SPECIMENS STUDIED. FLOREANA: 3 ♀♀, II-3-1964; Wittmer Farm, II-15-1964 (Usinger); PINZÓN: 1 ♂, 2 ♀♀, II-7-1964, *Scalesia* species (Ashlock).

ADDITIONAL SPECIMENS. FLOREANA: 1 ♂, 2 ♀♀, same data as above. SANTA CRUZ: 1 ♀, Horneman Farm, 220 m., III-18-1964 (Cavagnaro).

This species is easily separated from the others by the presence of 6 longitudinal fuscous stripes on the disc of pronotum.

32. *Dagbertus formosus* Carvalho, new species.

(Figure 49.)

Characterized by its color and structure of male genitalia.

MALE. Length 3.0 mm., width 1.3 mm. *Head*: Length 0.2 mm., width 0.8 mm., vertex 0.25 mm. *Antennae*: Segment I, length 0.3 mm.; II, 1.2 mm.; III, 0.5 mm.; IV, 0.4 mm. *Pronotum*: Length 0.4 mm., width at base 1.1 mm.

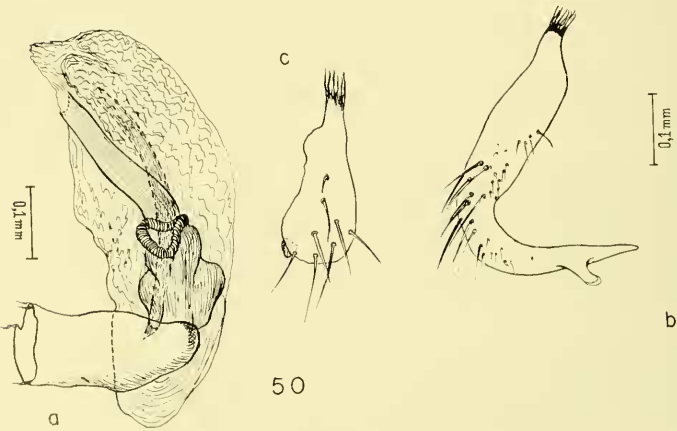
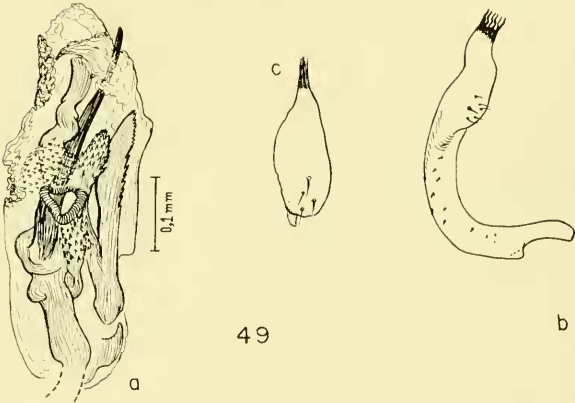
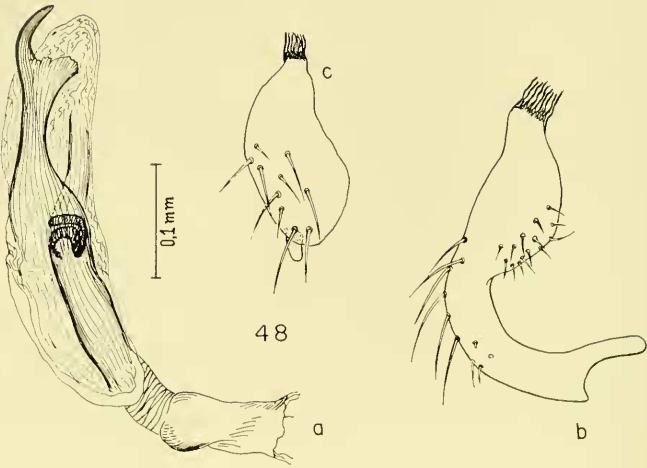
General color pale yellow with reddish areas; eyes reddish brown to black; head (except the reddish lorum) and pronotum pale to lemon yellow; scutellum pale at middle and apex with reddish tinge laterally; transverse fascia on basal portion of hemelytra reaching to level of middle of clavus and an apical narrower transverse fascia beyond apex of clavus, extreme apex of cuneus, red to reddish brown; membrane fuscous; antennal segment I reddish brown, segment II pale with reddish subbasal and apical portions, segment III pale, reddish apically, segment IV tipped with fuscous; underside pale yellow, fascia on propleura and mesosternum laterally reddish brown; coxae pale yellow, the median and posterior pair with reddish spots, trochanters pale, femora reddish brown with a median and a subapical pale fascia, the hind pair darker, pale only subapically, tibiae pale with extreme base, a subbasal ring and extreme apex reddish brown, tarsi pale, tipped with fuscous.

Rostrum reaching posterior coxae.

Genitalia: Aedeagus (fig. 49a) showing a typical vesica, with spinose areas, a strongly sclerotized spiculum and a somewhat ctenoid, less sclerotized one. Left clasper (fig. 49b) as illustrated. Right clasper (fig. 49c) small, pointed apically.

FEMALE. Unknown.

HOLOTYPE. Male. Galápagos Archipelago, SANTA CRUZ: Academy Bay, Darwin Research Station, II-20-1964 (Cavagnaro and Schuster).



ADDITIONAL SPECIMENS. 1 ♂, same locality as type, I-29-1964, at light (Schuster); 1 ♂, same data, II-6-1964.

This species approaches *Dagbertus bonariensis* (Stål), in general aspect but differs from it by its color and by the structure of the male genitalia.

33. *Dagbertus marmoratus* Carvalho, new species.

(Figure 50.)

Characterized by its color and male genitalia.

MALE. Length 3.9 mm., width 1.6 mm. *Head*: Length 0.2 mm., width 1.0 mm., vertex 0.32 mm. *Antennae*: Segment I, length 0.5 mm.; II, 1.6 mm.; III, 0.6 mm.; IV, 0.4 mm. *Pronotum*: Length 0.5 mm., width at base 1.4 mm.

General color pale flavescent marmorate with brownish fuscous; head brownish fuscous, a small triangular area on vertex, two obsolete spots on internal margin of eyes, suture between vertex and frons pale to whitish, lorum, gena and clypeus milky-white with median vittae or the latter broken into pale areas or spots; pronotum brownish fuscous, extreme lateral margins, callosities and central spot on disc pale to whitish, in one specimen the vitta on callosities and central spot of disc fuse to form a broken median longitudinal vitta following a small pale triangular area on vertex and pale median area of scutellum; hemelytra marmorate, especially on clavus and corium, embolium and cuneus translucent, black apically, the latter with a milky-white obsolete spot at internal margin sub-basally, membrane fuscous with paler nervures; antennae pale, apex of segment II, segments III and IV fuscous; underside of body pale flavescent to whitish, some darkish-brown areas present on mesopleuron, metapleuron, propleuron (male) and abdomen; rostrum pale, tipped with fuscous; legs pale to flavescent, femora, especially II and III pairs, with two fuscous bands apically, tibiae with three slender fuscous bands and spines fuscous, tarsi tipped with fuscous.

Rostrum reaching basal third of abdomen.

Genitalia: Aedeagus (fig. 50a) with vesica as shown in figure. Left clasper (fig. 50b) with a subapical branch. Right clasper (fig. 50c) small, with a small pointed lobe apically.

FEMALE. Similar to male in color. Length 4.2 mm., width 1.8 mm.

HOLOTYPE. Male. Galápagos Archipelago, FLOREANA: II-15-1964, (Unger).

ALLOTYPE. Female. Same data as type.

ADDITIONAL SPECIMEN. 1 ♀, same data as type.

This species differs markedly from all others of the genus by its peculiar color and by the structure of the male genitalia.

←

FIGURES 48-50. *Dagbertus* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 48. *D. darwini* (Butler); figure 49. *D. formosus* Carvalho, new species; figure 50. *D. marmoratus* Carvalho, new species.

34. *Dagbertus quadrinotatus* (Walker).

(Figures 47, 51.)

Capsus quadrinotatus WALKER, 1873, Cat. Het., vol. 6, p. 113.*Dagbertus quadrinotatus* DISTANT, 1904, Ann. Mag. Nat. Hist., vol. 13, p. 203.

Characterized by its color and structure of male genitalia.

MALE. Length 4.5 mm., width 1.8 mm. *Head*: Length 0.2 mm., width 0.9 mm., vertex 0.40 mm. *Antennae*: Segment I, length 0.6 mm.; II, 1.6 mm.; III, 1.1 mm.; IV, 0.4 mm. *Pronotum*: Length 0.6 mm., width at base 1.2 mm.

The types of this species were examined recently by Dr. W. E. China, British Museum (Natural History), who kindly communicated the following remarks: "General color pale sordid straw color with eyes black and the following dark brown markings: -Tylus; a faint inverted Y-mark on vertex (pale brown); a broad transverse band across base of pronotum; two divergent stripes on scutellum; inner half of clavus, claval suture, middle of emboliar suture; and oblique triangular mark on base of corium; a broad subtriangular mark on disc of corium, one angle touching apical margin, another nearly reaching the apex of clavus, and the other nearly reaching mark on base of corium; apex of embolium and apex of cuneus; membrane infuscate with a pale spot on one side of base beneath dark spot at apex of cuneus; pro- meso- and metapleura and a broad stripe down each side of abdomen dark brown. Second antennal segment black (3rd and 4th missing); apices of tibiae and tarsi black. The female 'type' specimen with brown markings less distinct and the head and pronotum more or less entirely suffused with brown. Recorded from James Is." The color of the specimens studied agrees with the type description.

Genitalia: Aedeagus (fig. 51a) of the generic type, with a characteristic spiculum. Left clasper (fig. 51b) as seen in illustration. Right clasper (fig. 51c) as seen in figure.

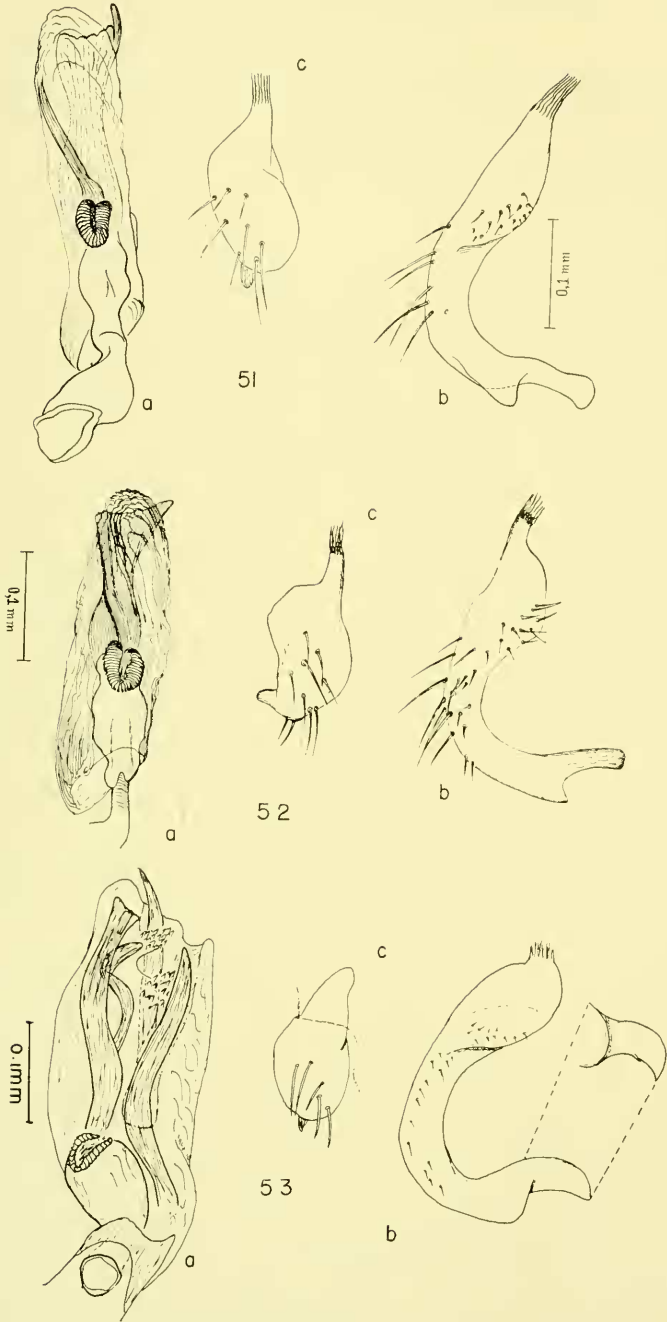
FEMALE. Similar to male, slightly more robust.

DISTRIBUTION. Galápagos Archipelago (San Cristóbal, Santa Cruz, Santiago Islands).

SPECIMENS STUDIED. SAN CRISTÓBAL: 4 ♀♀, Progreso, II-23-1964 (Usinger); SANTA CRUZ: 2 ♀♀, 440 m., Table Mountain, IV-16-1964 (Cavagnaro); 4 ♂♂, 6 ♀♀, abandoned garden, 5 miles N. Academy Bay, I-24-1964 (Ashlock).

ADDITIONAL SPECIMENS. SANTA CRUZ: 1 ♀, Horneman Farm, 220 m., II-10-1964 (Cavagnaro); 1 ♀, same data, III-18-1964; 1 ♂, 1 ♀, same data, V-16-1964; 1 ♀, Conway Bay, III-16-1935 (Crocker). SANTIAGO: 1 ♂, N.W.

FIGURES 51-53. *Dagbertus* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 51. *D. quadrinotatus* (Walker); figure 52. *D. spoliatus* (Walker); figure 53. *D. pallidus* Gagné, new species.



slope, 600 m., V-30-1964 (Cavagnaro). SAN CRISTÓBAL: 1 ♀, same data as above.

This species is separated from the others in the genus by the shape of the spiculum of the aedeagus, by its color and by the different shape of the apex of left clasper.

35. *Dagbertus spoliatus* (Walker).

(Figure 52.)

Capsus spoliatus WALKER, 1873, Cat. Het., vol. 6, p. 112.

Dagbertus (?) *spoliatus* DISTANT, 1904, Ann. Mag. Nat. Hist., ser. 7, vol. 13, p. 203.

Characterized by its color and male genitalia.

MALE. Length 3.5 mm., width 1.1 mm. *Head*: Length 0.2 mm., width 0.8 mm., vertex 0.32 mm. *Antennae*: Segment I, length 0.5 mm.; II, 1.5 mm.; III, 0.8 mm.; IV, 0.5 mm. *Pronotum*: Length 0.5 mm., width at base 1.1 mm.

General color pale yellowish testaceous; eyes, segment II (except basal portion), III and IV of antennae, dark brown; apices of embolium and cuneus dark; pronotum posteriorly, middle of scutellum (except apex), apex of clavus and base of membrane, infuscated; membrane fuscous; clypeus dark brown to piceous, and oblique fascia on lorum and another on gena, reddish brown to red; propleura with two horizontal brown fasciae, sometimes with a reddish tinge, legs yellowish testaceous, apices of posterior femora with two dark rings, sometimes obsolete, extreme apex of tibiae, last tarsal segment and claws, infuscated. The dark markings are more evident on fully mature specimens. Some specimens did not show the reddish fascia on lorum or the two fasciae on propleura and the segment II of antennae is mostly pale.

Rostrum reaching the sixth abdominal segment.

Genitalia: Aedeagus (fig. 52a) with a typical spiculum, broader on its apex. Left clasper (fig. 52b) as seen in figure, with setae dorsally. Right clasper (fig. 52c) as illustrated.

FEMALE. Similar to male in color, noticeably more robust. Length 4.5 mm., width 1.8 mm.

DISTRIBUTION. Galápagos Archipelago (Floreana Island).

SPECIMENS STUDIED. FLOREANA: 3 ♂♂, 3 ♀♀, Wittmer Farm, II-15-1964 (Usinger).

ADDITIONAL SPECIMENS. 7 ♀♀, same data as above; 8 ♀♀, same locality and collector, II-18-1964.

This species is easily separated by the color and by the structure of male genitalia.

36. *Dagbertus pallidus* Gagné, new species.

(Figure 53.)

In all of the *Dagbertus* species which are described by Gagné, the first mea-

surement is that of the corresponding holotype (or allotype); the paratype variation, if any, follows in brackets.

MALE. Body length 3.8 mm. (3.5 to 3.8 mm.); width 1.65 mm. (1.53 to 1.65 mm.). *Head:* Length 0.51 mm. (0.51 to 0.57 mm.); width 0.97 mm. (0.95 to 1.03 mm.); vertex width 0.26 mm. (0.23 to 0.26 mm.); reddish fascia along juncture of lorum and jugum continuing onto edge of tylus, remainder pale yellow. *Antennae:* I, 0.48 mm. (0.46 to 0.50 mm.), yellow with a reddish median ring and another on apex; II, 1.45 mm. (1.45 to 1.51 mm.), a reddish ring basally, remainder yellow; III, 0.60 mm. (0.60 to 0.62 mm.), yellow; IV, 0.57 mm., yellow. *Pronotum:* Length 0.61 mm. (0.61 to 0.67 mm.); width 1.35 mm. (1.31 to 1.35 mm.); apical half of propleura reddish; remainder of pronotum yellow. Scutellum and hemelytra yellow; cuneus slightly infusate at extreme apex; corium brownish on inner half of apex; membrane infusate. *Rostrum:* Length 1.51 mm. (1.43 to 1.51 mm.) reaching apices of hind coxae; yellow, apex brown. *Legs:* Fore- and middle coxae pale yellow with a reddish ring on outer apices, all trochanters yellow, fore-femora yellow with a subapical brown ring, all tibiae yellow with a subbasal brown ring and darkening toward apices, all tarsi yellow and darkening apically; mesosternum yellow; episternum and epimeron reddish with yellow bases; middle femora yellow, distal third brownish marmorate; metapleuron yellow on basal half, reddish on apical half, excepting the yellow ostiolar peritreme; hind coxae reddish on base with a median red spot; hind femora brownish marmorate on apical three quarters and yellow on basal quarter. Abdomen yellow.

Genitalia: Aedeagus with spinose areas and a complex vesica with accessory spiculae (fig. 53a). Claspers as illustrated (fig. 53b, c).

FEMALE. Differing from male as follows: Body length 4.10 mm. (4.10 to 4.62 mm.); width 1.80 mm. (1.80 to 1.98 mm.). *Head:* Length 0.52 mm. (0.52 to 0.60 mm.); width 0.97 mm. (0.97 to 1.03 mm.); vertex width 0.33 mm. (0.33 to 0.35 mm.); lorum, jugum and base of buccula reddish. *Antennae:* I, 0.52 mm., lacking the median ring; II, 1.51 mm. (1.51 to 1.56 mm.); III, 0.71 mm.; IV, 0.65 mm. *Pronotum:* Length 0.65 mm. (0.65 to 0.73 mm.); width 1.36 mm. (1.36 to 1.49 mm.). *Rostrum:* Length 1.60 mm. (1.60 to 1.61 mm.), reaching base of ovipositor.

HOLOTYPE. Male. Galápagos Archipelago, Isla Santa Cruz, Academy Bay, Darwin Research Station, II-24-1964 (Cavagnaro and Schuster).

ALLOTYPE. Female. Same locality, II-12-1964.

PARATYPES. One male, same locality (Schuster), II-10-1964, at light; 1 ♀, same locality, II-19-1964.

This is the only Galápagos species of *Dagbertus* which is uniformly yellow dorsally excepting the infusate membrane and inner apex of the corium. The complex spiculation of the aedeagus suggests affinities with *D. formosus* and the markings on the first antennal segment are identical.

37. *Dagbertus nigrifrons* Gagné, new species.

(Figure 54.)

MALE. Length 3.45 mm. *Head*: Length 0.52 mm.; width 0.86 mm.; vertex width 0.35 mm.; shining brownish-black excepting yellow inner apex of jugum, anterior third of buccula, base of vertex and surrounding antennal socket. *Antennae*: I, 0.49 mm., yellow; II, 1.67 mm., yellow near base, remainder dark brown; III, 0.72 mm., dark brown; IV, broken. *Pronotum*: Length 0.56 mm., width 1.09 mm.; collar, xyphus, apex of propleura and transversely across median of disc, yellow, remainder dark brown. Mesoscutellum and two longitudinal scutellar stripes joining basally, dark brown. Inner half of clavus, apices of embolium and cuneus, dark brown; remainder sordid yellow. Membrane translucent. *Rostrum*: Length 1.92 mm., reaching middle of genital segment; yellow. *Legs*: Fore and hind legs broken beyond coxae; all coxae yellow; episternum, epimeron, basalar plate and sternum dark brown; mesothoracic spiracle creamy white; middle legs sordid yellow, tarsi darkening apically; pleura, base of metapleuron and apical half of ostiolar peritreme yellow, remainder dark brown. *Abdomen*: Yellowish-brown laterally, venter yellow.

Genitalia: Vesica typically twisted basally and broader apically (fig. 54a). Claspers as illustrated (fig. 54b, c).

FEMALE. Differing from male as follows: Length 4.50 mm. (3.97 to 4.50 mm.); width 2.05 mm. (1.67 to 2.05 mm.). *Head*: Length 0.57 mm. (0.57 to 0.72 mm.); width 1.01 mm. (0.96 to 1.01 mm.); vertex width 0.42 mm. (0.37 to 0.42 mm.); brownish-black, except yellow bordering eyes above antennae and broadly across base of vertex. *Antennae*: I, 0.60 mm. (0.48 to 0.60 mm.); II, 1.54 mm. (1.51 to 1.64 mm.), yellow with dark brown apex; III, 1.09 mm. (1.00 to 1.09 mm.); IV, 0.53, dark brown. *Pronotum*: Length 0.80 mm. (0.65 to 0.80 mm.); width 1.47 mm. (1.34 to 1.47 mm.), apical half yellowish-brown, darker posteriorly with the median yellowish area, a reddish fascia on propleura near coxal cleft. Mesoscutellum, scutellum, and hemelytra yellowish brown, darker along claval suture, apices of corium and cuneus; membrane irregularly infuscate. *Rostrum*: Length 2.00 mm. (1.93 to 2.00 mm.); reaching slightly past base of ovipositor. *Legs*: Hind legs brownish marmorate on apical half of femora.

HOLOTYPE. Male. Galápagos Archipelago, Wittmer Farm, Floreana Island, II-15-1964 (Usinger).

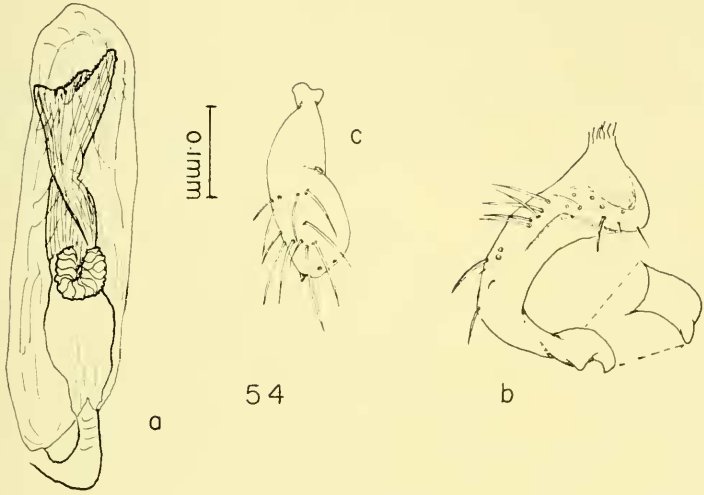
ALLOTYPE. Female. Same data as holotype.

PARATYPES. Three females, same data as holotype.

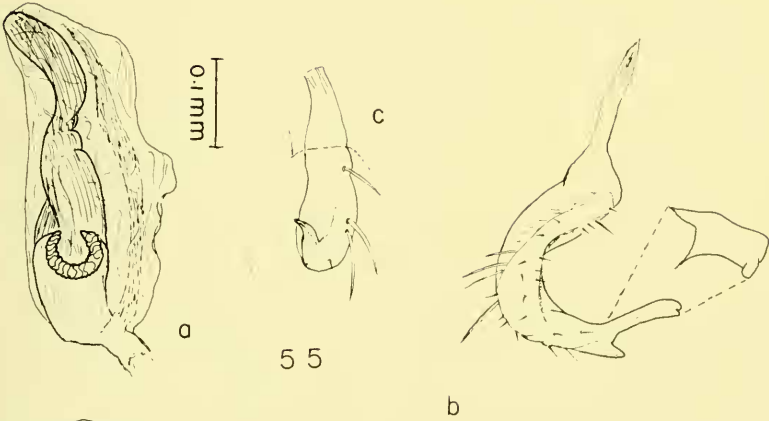
In coloration this species most closely resembles *D. quadrinotatus*, but its

→

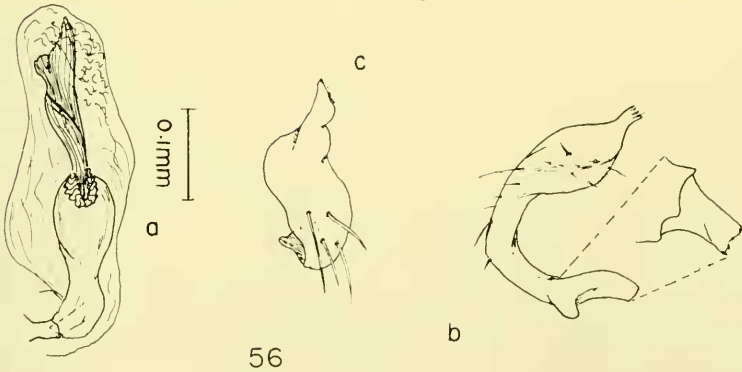
FIGURES 54-56. *Dagbertus* species: a, Aedeagus; b, Left clasper; c, Right clasper. Figure 54. *D. nigrifrons* Gagné, new species (holotype male); figure 55. *D. lineatus* Gagné, new species; figure 56. *D. figuratus* Gagné, new species (holotype male).



54



55



56

shining brownish-black head and dark pronotum with a paler median area should distinguish it.

The holotype is in poor condition, lacking the right fore-wing, the last antennal segments and the fore and hind legs. Darker females in the series have evident the two basally joined longitudinal lines on the scutellum. According to Usinger's field notes, this species could have been on "*Cordia* or a narrow leafed, white-flowered composite."

38. *Dagbertus lineatus* Gagné, new species.

(Figure 55.)

MALE. Length 3.25 mm. (3.25 to 3.27 mm.), width 1.26 mm. (1.26 to 1.31 mm.). *Head*: Length 0.47 mm. (0.47 to 0.56 mm.), width 0.83 mm. (0.83 to 0.87 mm.); vertex width 0.34 mm.; bases of lorum and tylus and a narrow line continuing from base of tylus to middle of vertex, brownish, remainder sordid yellow. *Antennae*: I, 0.47 mm. (0.47 to 0.56 mm.), sordid yellow; II, 1.47 mm. (1.45 to 1.47 mm.), brownish-black, extreme base sordid yellow; III, 0.94 mm. (0.91 to 1.05 mm.), brownish black; IV, 0.64 mm. (0.64 to 0.74 mm.), brownish-black. *Pronotum*: Length 0.55 mm. (0.55 to 0.60 mm.); width 1.06 mm. (1.06 to 1.16 mm.); yellowish, slightly darker across the base, but paler on propleura. Mesoscutellum, scutellum, and hemelytra yellowish with a brownish line along edge of clavus and commissure, and along claval suture; apex of embolium and cuneus brownish; membrane translucent, infuscated on inner edge from anal ridge to apex of opposite cuneus. *Rostrum*: Length 1.49 mm. (1.44 to 1.68 mm.); reaching middle of sixth abdominal segment; yellowish with dark apex. Fore and middle legs yellow; apical tarsal segments brownish; apical half of hind femora yellowish-brown, remainder yellow. Abdomen yellow.

Genitalia: Vesica not typically twisted basally and widening apically, with an accessory spiculum (fig. 55a). Claspers as illustrated (figs. 55b, c).

FEMALE. Differing from the male as follows: Length 4.23 mm.; width 1.53 mm. *Head*: Length 0.64 mm.; width 0.86 mm.; vertex width 0.40 mm.; base of lorum, anterior half of buccula and a spot on outer edge of antennal socket, reddish, remainder sordid yellow. *Antennae*: I, 0.53 mm.; II, 1.63 mm., yellow with a darker apex; III, 1.11 mm., light brown; IV, 0.82 mm., light brown. *Pronotum*: Length 0.68 mm.; width 1.24 mm.; yellow with a reddish fascia on apex of coxal cleft. Inner edge of membrane infumate half that distance in male, apex of large areole infumate. *Rostrum*: Length 1.75 mm.; almost reaching base of ovipositor. Legs and abdomen yellowish.

HOLOTYPE. Male. Galápagos Archipelago, Isla Fernandina, W. side, 1100 feet, II-5-1964 (Cavagnaro).

ALLOTYPE. Female. Same data as holotype.

PARATYPES. Two males. Same data as holotype.

In markings and general coloration this species falls between *D. quadrinotatus* and *D. spoliatus*, but the shape of the vesica and its accessory spiculum, in addition to the shape of the left clasper and its setae, suggest closer affinities to *D. marmoratus*.

39. **Dagbertus figuratus** Gagné, new species.

(Figure 56.)

MALE. Length 3.30 mm.; width 0.93 mm. *Head*: Length 0.54 mm.; width 0.82 mm.; vertex width 0.31 mm.; yellow with reddish fascia as follows: anterior edge of lorum, upper and inner edge of antennal socket and linearly branching obliquely to tylus and again in a "U" back to eye near middle of vertex, a median Y-shaped line along middle of tylus and vertex, arms of fascia on vertex extending to postero-lateral edge of eye. *Antennae*: I, 0.51 mm., dark brown; II, 1.57 mm., this and remaining piece of III, black; III and IV broken. *Pronotum*: Length 0.49 mm.; width 0.99 mm.; yellowish with reddish fascia as follows: an X-shaped marking medially on apex, the arms of which extend to collar anteriorly and posteriorly to middle of disc, one complete longitudinal line on edge of pronotum, one on base and one on apex of propleura, and an incomplete line near edge of pronotum extending to middle of disc; disc impressed across apex. Mesoscutellum reddish brown. Scutellum with two longitudinal lines, joined basally. Hemelytra yellowish-brown, darker along inner edge of corium, all veins, claval suture, commissure and apex of cuneus; membrane infusate between anal ridges and in apex of large areole and extending laterally into membrane. *Rostrum*: Length 1.84 mm.; reaching middle of genital segment; yellow with a dark apex. *Legs*: Fore and hind legs missing beyond coxae; coxae pale yellow; sternum yellow medially and reddish laterally; the apical reddish line of propleura extending across middle of episternum, basal line extending narrowly across basalar plate, base of epimeron and broadly across apex of metapleuron; middle femora yellow with a light brown ring subapically, tibia yellow, darkening apically, tarsi missing. *Abdomen*: Yellow with a longitudinal reddish fascia along upper lateral edge.

Genitalia: Aedeagus with typical basally twisted vesica which broadens apically (fig. 56a). Claspers as illustrated (figs. 56b, c).

HOLOTYPE. Male. Galápagos Archipelago, Isla Santa Cruz, Grassland, V-5-1964, N. slope, 200 feet (Cavagnaro).

The markings are unique although the general pattern approaches that of *D. darwini*; the similar vesica may also indicate an affinity with that species; but *D. figuratus*, with *D. lineatus* and *D. quadrinotatus*, are the only Galápagos species of *Dagbertus* in which the rostrum of the male reaches the middle of the genital segment.

Dagbertus species

Also before us are 3 females with unassociated males, each possibly representing an additional species. Because the males are unknown, formal description is withheld. They are as follows:

SPECIES A, 1 ♀, Isla Pinzón, Upper Caldera, Valley Area, II-7-1964 (Cavagnaro). The specimen appears to be allied to *D. lineatus* but differs in having a dark brown tylus, a brownish vertex, the second antennal segment pale on basal half and it lacks the reddish fascia entirely. It measures 4.06 mm. long and 1.86 mm. wide.

SPECIES B, 1 ♀, San Cristóbal Island, Progreso (above *Miconia*), II-23-1964 (Usinger). Possible allied to *D. spoliatus*, but the hemelytra are reddish-brown apically and medially, contrasting with an entirely pale pronotum and scutellum; the apical half of the femora are reddish. It measures 4.50 mm. long and 1.86 mm. wide.

SPECIES C, 1 ♀, same data as latter female. This specimen is not clearly allied to any of the Galápagos species of *Dagbertus*. It is almost entirely rufous excepting the paler calli and yellow coxae; the membrane is deeply infusate; the striking, entirely red abdomen is unique. It measures 4.56 mm. long and 1.80 mm. wide.

BIBLIOGRAPHY

BARBER, H. G.

1925. Hemiptera-Heteroptera from the Williams Galápagos Expedition. *Zoologica*, vol. 5, pp. 241-254.
1934. The Norwegian Zoological Expedition to the Galápagos Islands 1925, conducted by Alf Wollebaek. XI. Hemiptera-Heteroptera. *Nyt Magazin for Naturvidenskaberne*, vol. 74, pp. 281-289. [Reprinted as *Meddelelser fra det Zoologiske Museum, Oslo*, nr. 42, pp. 281-289 (1934).]

BUTLER, A. G.

1877. Account of the Zoological Collection made during the visit of H.M.S. "Peterel" to the Galápagos Islands. X. Lepidoptera, Orthoptera, Hemiptera. *Proceedings of the Zoological Society of London*, 1877, pp. 86-91.

CARVALHO, J. C. M.

1955. Keys to the Genera of Miridae of the World (Hemiptera). *Boletim de Museu Paraense Emílio Goeldi, Belém, Pará, Brasil*, vol. 11, no. 2, 151 pp., 263 figs.
1958. Neotropical Miridae, LXXXIII: A New Species of "*Cyrtopeltis* (*Engytatus*)" with Notes on Related Species (Hemiptera, Heteroptera). *Revista Brasileira de Biologia*, vol. 18, no. 3, pp. 333-336.
1959. A Catalogue of the Miridae of the World. *Arquivos do Museu Nacional, Rio de Janeiro, Brazil*, vol. 48, 384 pp. (part 4).

CARVALHO, J. C. M., AND E. WAGNER

1957. A world revision of the genus *Trigonotylus* Fieber. *Arquivos do Museu Nacional, Brazil*, vol. 43, pp. 121-155.

CHAMPION, G. C.

1924. The insects of the Galápagos Islands. *The Entomologist's Monthly Magazine*, vol. 60, pp. 259-260.

DISTANT, W. L.

1904. Rhynchotal Notes—XXI. The Annals and Magazine of Natural History, ser. 7, vol. 13, pp. 194–206.

KELTON, L. A.

1955. Genera and Subgenera of the *Lygus* Complex (Hemiptera, Miridae). Canadian Entomologist, vol. 87, no. 7, pp. 277–301.

VAN DUZEE, E. P.

1933. The Templeton Crocker Expedition of the California Academy of Sciences 1932, no. 4. Characters of twenty-four new species of Hemiptera from the Galápagos Islands and the coast and islands of Central America and Mexico. Proceedings of the California Academy of Sciences, ser. 4, vol. 21, pp. 25–40.
1937. No. 33. Hemiptera of the Templeton Crocker Expedition to Polynesia in 1934–1935. Proceedings of the California Academy of Sciences, ser. 4, vol. 22, pp. 111–126.

WALKER, F.

1873. Catalogue of the specimens of Hemiptera-Heteroptera in the collection of the British Museum. London. Part VI, pp. 1–210.